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TIMBER MANAGEMENT PLAN

GRAND MESA WORKING CIRCLE and
Uncompahgre Working Circle
FY 1962 - 1971

GRAND MESA-UNCOMPAHGRE
NATIONAL FOREST
COLORADO

Region 2

REGION TWO

FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

TIMBER MANAGEMENT PLAN

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FY 1962 - 1971

GRAND MESA-UNCOMPAHGRE
NATIONAL FOREST
COLORADO

Region 2

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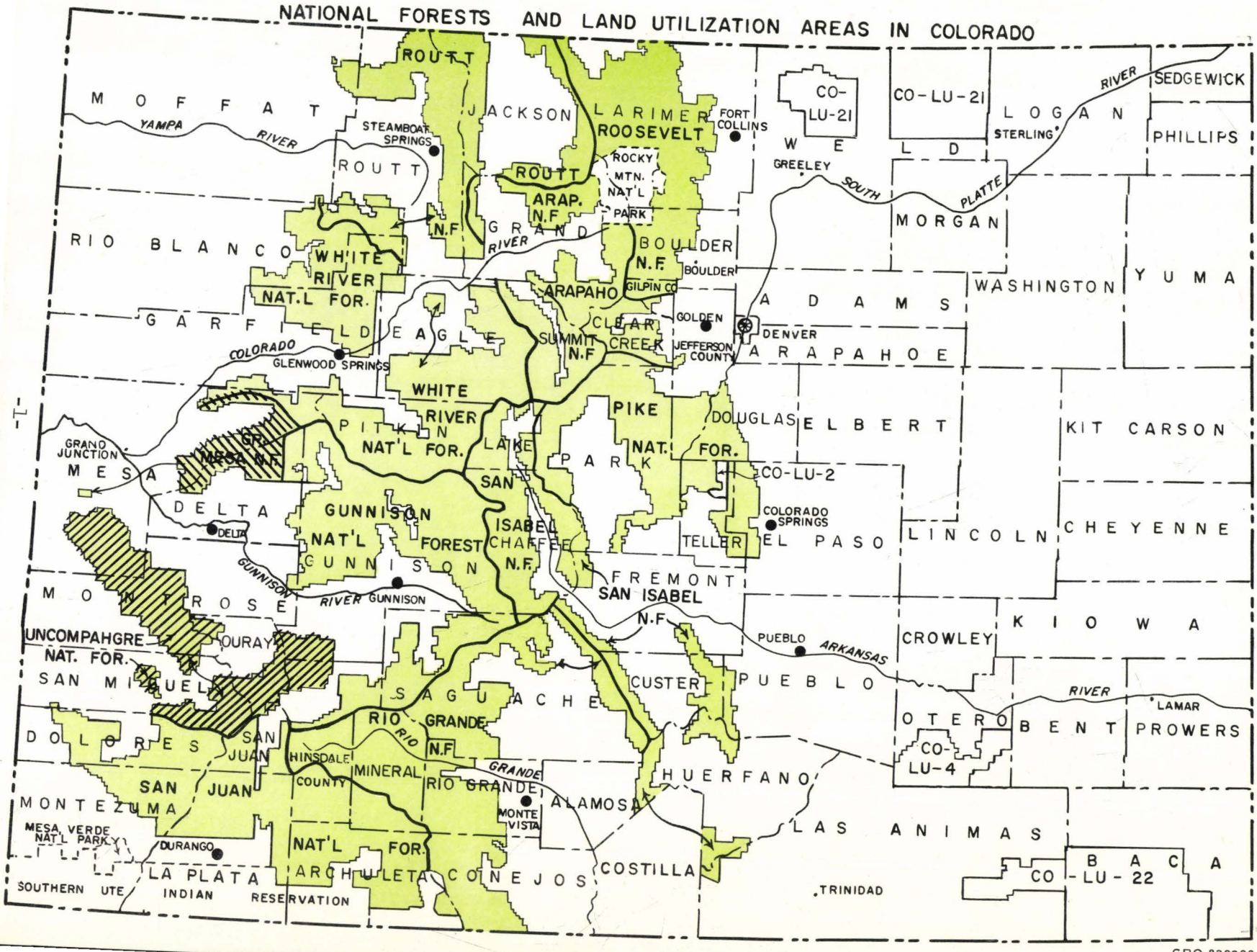
NATIONAL FORESTS AND LAND UTILIZATION AREAS IN COLORADO
ROUTT
JACKSON
LARIMER
ROOSEVELT
CO-LU-21
CO-LU-21
SEDGEWICK
PHILLIPS
LOGAN
MOFFAT
YAMPA RIVER
STEAMBOAT SPRINGS
FORT COLLINS
STERLING
GREELEY
SOUTH PLATTE RIVER
ROUTT
ARAP. N.F.
ROCKY MTN. NAT'L PARK
MORGAN
RIO BLANCO
WHITE RIVER NAT.L FOR.
N.F.
GRAND RIVER
BOULDER
BOULDER
N.F.
WASHINGTON
YUMA
ARAPAHO
GILPIN CO
GOLDEN
ADAMS
GARFIELD
EAGLE
COLORADO
GLENWOOD SPRINGS
CLEAR CREEK
SUMMIT
N.F.
JEFFERSON COUNTY
DENVER
ARAPAHOE
WHITE RIVER
PIKE
PITKIN NAT'L FOR.
DOUGLAS
ELBERT
KIT CARSON
GRAND JUNCTION
MESA
GR. MESA N.F.
LAKE
PARK
NAT. FOR.
CO-LU-2
SAN
DELTA
GUNNISON NAT'L FOREST
ISABEL
CHAFFEE
COLORADO SPRINGS
TELLER
EL PASO
LINCOLN
CHEYENNE
DELTA
GUNNISON
GUNNISON RIVER
N.F.
FREMONT
SAN ISABEL
N.F.
MONTROSE
UNCOMPAHGRE NAT. FOR.
OURAY
PUEBLO
ARKANSAS RIVER
CROWLEY
KIOWA
SAN MIGUEL
SAGUACHE
CUSTER
PUEBLO
LAMAR
OTERO
BENT
PROWERS
DOLORES
SAN JUAN
RIO GRANDE N.F.
RIO GRANDE
HINSDALE
MINERAL
CO-LU-4
HUERFANO
SAN JUAN
COUNTY
RIO GRANDE
ALAMOSA
MONTE VISTA
MONTEZUMA
LAS ANIMAS
MESA VERDE NAT'L PARK
DURANGO
NAT'L FOR.
LA PLATA
ARCHULETA
CONEJOS
COSTILLA
BACA
CO-LU-22
SOUTHERN UTE INDIAN RESERVATION
TRINIDAD
WORKING CIRCLES of the GRAND MESA-UNCOMPAHGRE NATIONAL FOREST
GRAND MESA WORKING CIRCLE
UNCOMPAHGRE WORKING CIRCLE
GPO 839398

SUMMARY OF PLAN

Table 1

Annual Allowable Cut

Type	Area	Volume
Spruce-Fir	790 acres	8.0 MM B.F.

Estimated Volume By Species From Regulated Area

Species	Volume MM B.F.
Engelmann Spruce	6.48
Subalpine Fir	1.12
Douglas-fir	0.02
Blue Spruce	0.02
Aspen	0.36
Total	8.00

Table 2

Total Volume Available For Cutting From Non-Regulated Aspen Type

140 MM C.F.

Table 3

Area By Ownership, Land Classification,
and Stand Size Class

Land Classification and Stand Size Class	National Forest	Private	Total
Commercial Forest Land			
Large Sawtimber	55	-	55
Small Sawtimber	83,069	302	83,371
Poletimber	89,247	1,556	90,803
Seedling-Sapling	10,123	310	10,433
Nonstocked	1,040	-	1,040
Sub-Total	183,534	2,168	185,702
Non-Commercial	71,882	1,578	73,460
Non-Forest	82,812	1,276	84,088
Grand Total	338,228	5,022	343,250

Table 4

Area of Commercial Forest Land By Timber Type, Stand Size and Stocking Class

National Forest Ownership Only

Acres

Timber Type	Stand Size Classes: Large Sawtimber: Med	Large Sawtimber: Poor	Large Sawtimber: Total	Small Sawtimber: Well	Small Sawtimber: Med.	Small Sawtimber: Poor	Small Sawtimber: Total	Poletimber: Well	Poletimber: Med.	Poletimber: Poor	Poletimber: Total	Seedling-Sapling: Well	Seedling-Sapling: Med	Seedling-Sapling: Poor	Seedling-Sapling: Total	Non-stocked	Total	Percent
Douglas-fir	35		35		150	610	760	30	70		100						895	1
Ponderosa Pine						15	15			20	20						35	
Spruce-Fir	20	0	20	60	29,211	51,733	81,004	3,265	4,525	2,460	10,250	40	180	50	270	1,020	92,564	50
Total Softwoods	55	0	55	60	29,361	52,358	81,779	3,295	4,595	2,480	10,370	40	180	50	270	1,020	93,494	51
Aspen							1,290				78,877				9,853	20	90,040	49
Grand Total			55				83,069				89,247				10,123	1,040	183,534	100
Percent							45				49				5	1	100	

Table 5

Total Volume For Commercial Forest Lands
By Ownership

	National Forest	Private	Total
Sawtimber MM B.F.	856	3	859
Products MM C.F.	158	1	159

Table 6

Total Volume of Sawtimber By Species
In Sawtimber Types

National Forest Unreserved Lands M B.F.

Sawtimber Types	Species: Douglas-fir	Subalpine Fir	Engelmann Spruce	Blue Spruce	Aspen	Total
Douglas-fir	3,274	1,336	238	13	741	5,602
Spruce-Fir	2,296	119,553	688,324	1,956	38,179	850,308
Total	5,570	120,889	688,562	1,969	38,920	855,910
Percent	0.65	14.12	80.45	0.23	4.55	100

Table 7

Periodic Annual Net Growth For Past 10 Years

Trees 5.0" D.B.H. and Larger

Type	Volume Per Acre	Total For Type
Douglas-fir		
Sawtimber	+5.40 B.F.	4 M B.F.
Poletimber	+5.66 C.F.	1 M C.F.
Spruce-Fir		
Sawtimber	+76.30 B.F.	6,182 M B.F.
Poletimber	+ 1.15 C.F.	12 M C.F.
Aspen		
Sawtimber)	+2.09 C.F.	168 M C.F.
Poletimber)		

Recommended Rotation

Type	Years
Engelmann Spruce	140

Revision Date: June 30, 1971

TIMBER MANAGEMENT PLAN

GRAND MESA WORKING CIRCLE

Grand Mesa-Uncompahgre National Forest

INTRODUCTION

This working circle plan constitutes the 10-year action program. The action prescribed is necessary to meet the long-term objectives in the General Timber Management Statement for the Grand Mesa-Uncompahgre National Forest.

The plan will be revised by not later than June 30, 1971. Earlier revisions may be made if necessary to meet changing conditions.

Detailed forest survey data, from which this plan is made, are found on IBM sheets labeled, "1957, Forest Survey, Colorado, IBM Sheets, Grand Mesa-Uncompahgre National Forest, Sample Unit #28." These are filed in a binder in the office of the forest supervisor, Delta, Colorado.

Block records containing maps, volumes, type areas and block descriptions will be filed in the timber management atlas of this working circle as they become available. These records will be kept current annually for action taken within the blocks. The current actions to be recorded are: Area and volume cut, both in regulated and unregulated types; area planted by species; area and type of stand improvement work done; and changes in ownership. This action will be recorded in a graphic and tabular form. The blocks are not broken down into compartments due to the lack of timber activities at this time. The needs for compartments will be given further consideration at the next revision.

The block records will be maintained in the offices of the district rangers concerned.

SUMMARY OF RESULTS UNDER PREVIOUS PLANS

Comparison Between Actual and Allowable Cut

During the 10-year period, F.Y. 1951-1960, the Grand Mesa Working Circle's cumulative actual cut was only 17% of its allowable cut. Total plant capacity in the working circle has not been adequate to cut the full amount of the allowable cut. Therefore, additional plant capacity of 5 MM B.F. annually is needed to process the timber cut on all lands in the working circle.

Several other factors precluded the harvesting of the allowable cut on the working circle. Most of the timber on the Grand Mesa Working Circle is inferior in size to that on the neighboring Uncompahgre Working Circle. It also grows in relatively small stands that require a proportionally greater mileage of road to the volume of timber harvested. The only existing main haul road on the working circle, State Highway 65, was a narrow dirt road containing many steep grades and sharp curves. Widening, relocating, and surfacing of 30 miles of this road was completed in 1960. An additional 15 miles need this improvement in order to have a suitable main haul road off the north side of Grand Mesa.

Timber Stand Improvement

Noncommercial weeding of subalpine fir has been done on 45 acres with sale area betterment funds. Commercial thinning was done on 22 acres through the sale of corral poles.

Disease, Insect, and Fire Control Accomplishment

Disease Control

Felling of aspen infected with Fomes igniarius was done on 57 acres. A sanitation cut of 20 acres in the spruce-fir type was made in a roadside strip.

Insect Control

During the early 1950's, the majority of the timber harvest on the working circle was in the form of salvage cuts in insect-killed spruce. Infested green spruce was harvested in conjunction with the salvage cuts. Since then, bark beetle populations have been held to endemic levels through the insect control provisions in timber sale contracts.

Fire Control

In the 10-year period, 1951-1960, 27 fires occurred on the working circle. Of these, 24, or 89%, were on commercial timber land. Only four acres of national forest land was burned over in the 10-year period.

MANAGEMENT OBJECTIVES

The objective of this plan is to make all practical progress toward meeting the long-range management objectives stated in the General Timber Management Statement for the forest. The action outlined is based on the premise that present mill capacity is insufficient to harvest the allowable cut on national forest lands and private lands.

1. Encourage the establishment of a mill in the Collbran area by offering timber for sale on the Collbran Block. This mill should cut an average of 5 MM B.F. per year.

2. Make larger sales on the Mesa and Lakes Blocks to enable the construction of roads and in order to more fully utilize the capacity of present mills.

3. With the cooperation of the regional office and adjacent forests, encourage the establishment of a roundwood products industry near the working circle.

4. Assure adequate stocking as soon as practicable by planting 300 trees per acre on all current cutover areas. Species to be planted will be determined by soil moisture conditions and exposure of the planting site.

5. Plant 5,000 acres to ponderosa pine which now support noncommercial stands of oak brush.

6. Reconvert to conifer species Sites III, IV, and V, aspen stands, consistent with other uses.

7. Continue an annual insect control program that will keep the insect population from building up into epidemic proportion.

REGULATION

Regulation will be by area with the allowable cut expressed in both acres and volume for the spruce-fir type. There is not sufficient acreage in other coniferous types to warrant regulation.

Aspen will not be placed under regulation at this time, as no markets are anticipated during the next 10 years. If a market develops, this plan will be revised and aspen will then be put under regulation.

Control

Control of the allowable cut will be by type area and not species or products cut within the type. Sales programs will be by species and products and will be of sufficient volume to meet area control objectives. Sales should normally exceed allowable cut objectives; otherwise the average annual cut will fall short of the allowable cut for the period.

The control of the cut will be by 10-year periods. Undercuts that have built up during the planning period may be cut during the remainder of the period, provided that cumulative cut does not exceed the periodic allowable cut by more than 10 percent. Overcuts and undercuts will not be carried forward into the next 10-year planning period.

If the present relationship between area and volume is found to be in error for the working circle as a whole, the volume allowable cut will be adjusted to be compatible with area regulation. No adjustment will be made prior to the end of the first five years.

The financed cut and sell quota for any one year is based on the expected volume of business for the year. It should be sufficient to meet allowable cut objectives for the working circle as scheduled in this plan.

Rotation

A 140-year rotation is used for calculating the allowable cut. This is average for the spruce-fir type in the region. This includes five years for regeneration after logging. Considering the large portion of the timber that is below rotation age and the lack of insects and disease in the stands, the allowable cut will be calculated on a rotation period of 140 years.

Method of Cutting

Region 2's Management Guide for Engelmann spruce and associated species, FSH2-2442.8 will be applied in designating timber for cutting. The guides provide for clear cutting in patches, groups or strips with even-age management as the objective.

Timber management along roadsides, recreation areas, streamsides, water fronts and buffer zones will be for the purpose of protecting, improving and maintaining stands of timber that will be adequate for the use to be made of the area. Harvesting in the two-storied spruce-fir sawtimber size type will normally be limited to the removal of the overmatured overstory and intermediate cuts in the understory. Intermediate cuttings should leave a residual stand of approximately 80-100 square feet of basal area in well distributed trees in order to maintain a wind-resistant stand and to promote an acceptable rate of growth. Timber cutting within designated recreation areas will be in accordance with the objective set up in the recreation plan for the specific area. There is approximately 12,500 acres of spruce-fir type in the special treatment group. This is about 13 percent of the total spruce-fir type.

This working circle is very popular as a recreation area and the magnitude of the use is increasing very rapidly. It is essential that a good timber management job be done in order to maintain good aesthetics in areas used by the general public. A pleasant appearance can normally be obtained in cutover areas in the special treatment zones by manipulating the size and shape of the group, patch or strip to fit local needs and doing a satisfactory slash disposal job. A complete slash disposal job will be accomplished immediately after logging in the special treatment areas. This may be by piling and burning, chipping, or other approved methods.

The Grand Mesa Working Circle is as intensively managed for water production as any comparable area in the nation. All phases of timber operations, including road construction, will be carried out in a manner which is not detrimental to this use.

Presale prescriptions will set up the requirements for each sale in accordance with directions in the Multiple-Use Management Guides for Western Colorado, forest and district plans and the Timber Management Guide for Engelmann spruce and associated species and Aspen, FSH2-2442.8.

The cutting schedule will provide as first priority the harvesting of the overmatured residual trees from the 1870-75 insect epidemic.

Growing Stock

The forest inventory 1957-58 divides the major timber types into stand size classes and stocking classes or crown density classes. The definitions for the classes are contained in Forest Survey Standards FSH 4819 and the field instructions for the 1955-58 project.

The standard stand size classes are:

Sawtimber	- 11.0" D.B.H. and larger
Poletimber	- 5.0" to 10.9" D.B.H.
Seedling-Saplings	- 1.0" to 4.9" D.B.H.
Nonstocked	- Less than 0.9" D.B.H.

Sawtimber stands have a net volume of 1,500 board feet (International 1/4" Log Rule) or more per acre in trees 11.0" D.B.H. and larger. Poletimber stands are those that fail to meet the definition for sawtimber stands, are at least 10 percent stocked with trees 5.0" D.B.H. and larger and the plurality of cubic volume is in trees 5.0" to 10.9" D.B.H. Seedling-sapling stands are those that do not meet the above conditions and are at least 10 percent stocked with trees 1.0" to 4.9" D.B.H. Nonstocked stands are those that are less than 10 percent stocked and do not meet the minimum conditions for the above classes.

Stocking classes or crown density classes refer to the extent to which growing space is utilized by present growing stock trees of commercial species. The classification is based on the percent of crown closure. The stocking classes for sawtimber

Table 8

Area Requiring Special Treatment
By Land Management Zones, Districts, Land Classification
and Major Types

Management Zones and Ranger Districts	Commercial Forest Lands				Non-Commercial Forest Lands	Non-Forest Lands	Total	Percent
	Spruce-Fir							
	Sawtimber	Poletimber	Total	Aspen				
Roadside Strips								
Collbran	547	68	615	1,230	924	308	3,077	
Mesa Lakes	2,092	359	2,451	1,222	609	1,835	6,117	
Sub-Total	2,639	427	3,066	2,452	1,533	2,143	9,194	37
Lakes & Reservoirs								
Zones								
Collbran	249	36	285	16	79	147	527	
Mesa Lakes	1,403	202	1,605	84	445	833	2,967	
Sub-Total	1,652	238	1,890	100	524	980	3,494	14
Streamside								
Zones								
Collbran	571	82	653	650	504	599	2,406	
Mesa Lakes	487	69	556	539	429	511	2,035	
Sub-Total	1,058	151	1,209	1,189	933	1,110	4,441	18
Recreation								
Site and Buffer								
Zones								
Collbran	1,589	325	1,914	283		143	2,340	
Mesa Lakes	3,705	759	4,464	661		333	5,458	
Sub-Total	5,294	1,084	6,378	944	None	476	7,798	31
Grand Total	10,643	1,900	12,543	4,685	2,990	4,709	24,927	100

From National Forest Recreation Survey - 1959.

stands, as used in this plan, are for the percent of closure of sawtimber crowns. The stocking classes for poletimber and seedling-sapling size stands are based on crown closure for all trees regardless of their size.

Classification	Percent of Crown Closure
Nonstocked	0-9
Poorly stocked	10-39
Medium stocked	40-69
Well stocked	70+

Condition classes were not used in the survey. The breakdown into stand-size classes does not reflect the growth potential into the next size class.

Approximately 50 percent of the commercial forest land is in the spruce-fir type, 49 percent is aspen and the remaining one percent is in Douglas-fir and ponderosa pine.

Table 9

Gross Area By Stand-Size Classes

	Spruce-Fir Type	
Stand-Size Classes	Area Acres	Percent
Sawtimber	81,024	87.5
Poletimber	10,250	11.1
Seedling-Saplings	270	0.3
Nonstocked	1,020	1.1
Total	92,564	100.00

The 1957 forest inventory did not type by age classes. The only available age data comes from the site trees. The age of two site trees per plot was determined. The plot data for the two working circles within the forest were combined. The distribution of site tree age classes is used to indicate the amount of the type in each age class.

Most of the spruce-fir sawtimber type is approaching rotation age and is a considerably younger stand than that on the Uncompahgre Working Circle.

Figure 1

AGE and D.B.H. of SITE TREES

(From Forest Survey)

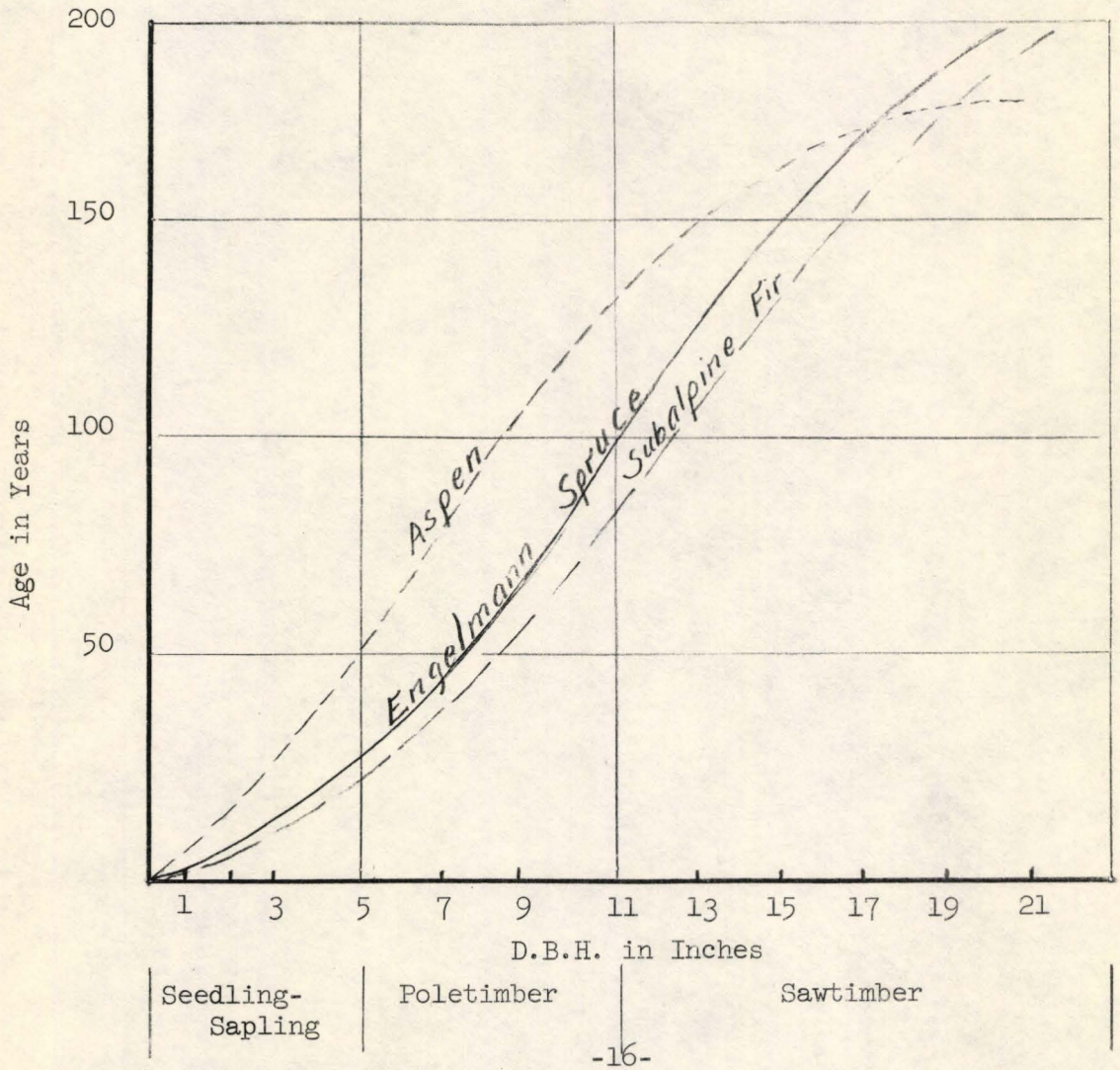

Table 10

Showing Distribution of Engelmann Spruce
Sawtimber Size Site Trees By Age Classes

Age Classes	Number of Trees	Percent
40-59	4	2
60-79	14	7
80-99	30	15
100-119	29	15
120-139	30	16
140+	88	45
Total	195	100

Overmatured Engelmann spruce trees in patches and as an overstory are scattered throughout the type. These are the residuals from the 1870-75 insect epidemic. The older stands and overstory will be given first priority in the cutting schedule.

Growth and Mortality

The current annual growth and mortality for the spruce-fir type is summarized in Table 11. This table shows the current annual periodic net growth is 76.30 board feet per acre in trees 9.0" D.B.H. and larger, and 13.79 cubic feet in trees 5.0" and larger. The average annual mortality based on the past five years is 19.19 board feet in trees 9.0" and larger, and 5.54 cubic feet in trees 5.0" and larger.

The net growth rate of 76.30 board feet per acre per year in the spruce-fir sawtimber type is an average of both the Uncompahgre Working Circle and the Grand Mesa Working Circle. Stands of this type in the Grand Mesa Working Circle are predominantly immature, while those in the Uncompahgre Working Circle are mostly overmature. When viewed in the light of this information, this figure is somewhat conservative for the Grand Mesa Working Circle. Any attempt to determine separate growth rates for the two working circles, based on current forest survey data, would not be statistically sound. Prior to the next revision of this plan, growth and mortality will be separated by working circles.

It is interesting to note, however, that most of the mortality in the spruce-fir type is in subalpine fir. This species shows a negative growth rate in all types and stand-size classes.

Although empirical yield tables are not available, a potential growth of from 150 to 200 board feet per acre can be expected after the stands within the type have been put under management.

Although between five and ten million board feet of timber were damaged by the spruce bark beetle in 1940-1943, a vigorous salvage program halted the epidemic. Since that time, the beetle has been held to endemic population levels. Although many snags are to be found in the working circle, there are no stands that can be classified as dead spruce.

Table 11

Periodic Net Growth and Annual Mortality
Average Per Acre in Spruce-Fir Types

Stand-Size Class	Annual Net Growth		Annual Mortality	
	Bd.Ft.	Cu.Ft.	Bd.Ft.	Cu.Ft.
Sawtimber	76.30	13.79	19.19	5.54
Poletimber	-	1.15	-	9.94

Calculation of Allowable Cut

The allowable cut is calculated on a 140-year rotation using a tabulation method and the current periodic annual net growth.

There are 92,564 acres of spruce-fir type in the working circle. Eighty-seven percent of the type is in sawtimber size, of which about 20 percent is overmatured. By the time the sawtimber has been cut the other stand-size classes will have reached rotation age. Harvesting based on rotation will make it possible to obtain a good distribution of age classes by the end of the first rotation period.

Thirteen percent of the type is in areas that will require special treatment. This will not affect the area to be cut, but will reduce the average volume per acre for the working circle as a whole by about 10 percent from that shown in the current stock and stand table.

None of the area is considered inoperable for the rotation period. Areas inoperable now due to unmerchantable volume or other economic reasons will, no doubt, become operable later in the rotation period and will be scheduled for harvesting accordingly.

Table 12 gives the allowable cut for each 10-year period for the first half of the rotation. The volume allowable cut was held constant. Growth was calculated at mid-point for each 10-year period. The area, acres was then adjusted to maintain the constant volume.

The current volume per acre is weighted as follows: Eighty-seven percent of the type will be clearcut at 10,492.88 board feet per acre (Table 20) and 13 percent will be partially cut at an average of about 50 percent of the present total volume per acre.

$$10{,}492.88 \times 0.87 + 5{,}246.44 \times 0.13 = 9{,}810.84 \text{ board feet}$$
per acre (Scribner Dec. C Log Rule)
or 2,481.02 cubic feet per acre.

The annual allowable cut for this planning period is:

Area - 790 acres
Volume - 8.0 MM B.F.

The species breakdown of the 8.0 MM B.F. (Table 20) is:

Species	Volume	Percent
Engelmann Spruce	6.48	80.95
Subalpine Fir	1.12	14.06
Douglas-fir	0.02	0.27
Blue Spruce	0.02	0.23
Aspen	0.36	4.49
Total	8.00	100.00

The allowable cut from the tabulation method may be compared with Kemp formula as follows:

$$\frac{81{,}024 \times 7 + 10{,}250 \times 5 + 270 \times 3 + 1{,}020}{4 \times 140} = 1{,}100 \text{ acres per year.}$$

1,100 acres x 10,167.54 board feet = 11.18 MM B.F. per year.

Table 12

Allowable Cut - Area and Volume By 10-Year Periods
For the First Half of the Rotation Period

10-Year Period	Area Periodic Allowable Cut: Acres	Average Volume Per Acre*: Board Feet	Total Volume Periodic Allowable Cut: MM B.F.	: M C.F.
1st	7,900	10,167.54	80	201
2nd	7,400	10,880.94	80	
3rd	6,900	11,594.34	80	
4th	6,500	12,307.74	80	
5th	6,100	13,021.14	80	
6th	5,800	13,734.54	80	
7th	5,600	14,447.94	80	

Total Area 46,200
Total Volume 566 MM B.F.

*Average volume per acre equals weighted current volume plus net growth calculated at mid-point. Unit of measurement based on Scribner Dec. C Log Rule.

Calculation of the Volume in the Aspen Type

Timber cut from the aspen type will not be regulated until a market is developed. It is questionable if such markets will materialize during the next 10 years.

Summary of Area and Volume in Aspen Type

Stand-Size Classes	Area: Acres	: Percent	Volume Per Acre: C.F.	Total Volume: M C.F.
Sawtimber	1,290	1	2,999.95	3,870
Poletimber	78,877	88	1,741.46	137,360
Seedling-Sapling	9,853	11	-	-
Nonstocked	20	-	-	-
Total	90,040	100		141,230

The volume breakdown by species is:

Species	Percent	Volume M C.F.
Aspen	77.2	109,030
Engelmann Spruce	14.5	20,478
Douglas-fir	5.8	8,191
Blue Spruce	1.7	2,401
Subalpine Fir	0.8	1,130
Total	100	141,230

Cutting Budget

The cutting budget for this period is shown in Table 13. Selection of areas to be cut is based on the age and condition of the sawtimber stands. More than half the timber to be offered would best be processed by a mill in Collbran. This will be done by encouraging the establishment of a new industry in that area.

Table 13

Cutting Budget - Grand Mesa Working Circle
Future Program
1962-1971

Spruce-Fir

Drainage	Block Number	Block Name	To Be Sold Net Acres	To Be Sold Net Volume M B.F.
Kiser Creek	2	Lakes	60	600
Scales Lake	3	Mesa	250	2,500
Indian Point	3	Mesa	250	2,500
Owens Creek	1	Collbran	1,600	16,000
Cottonwood Creek	3	Mesa	540	5,400
Bull Creek	3	Mesa	1,500	15,000
Leroux Creek	2	Lakes	2,200	22,000
Buzzard Creek	1	Collbran	600	6,000
Big Creek	1	Collbran	1,000	10,000
Total			8,000	80,000

TRANSPORTATION

Road Program to Meet the 10-Year Cutting Budget

The road survey and construction program for the 10-year period has been scheduled in Table 14. This schedule has been correlated with the cutting budget shown in Table 13.

All timber access roads in the working circle are expected to receive heavy recreation use after timber harvesting. Bridges and other improvements will be constructed initially to meet eventual all-purpose needs. All-purpose funds will bear the costs of any improvements not needed to harvest the timber.

Rights-of-Way

A right-of-way will be needed on the Leroux Creek Road No. 420 from the end of the county road to the forest boundary. This distance is approximately 1.5 miles. An engineering survey will be made in 1964 and the right-of-way will be obtained by not later than F.Y. 1965.

There are no other rights-of-way needed for this planning period.

Table 14

Ten-Year Road Program - Grand Mesa Working Circle

Block	No.	Road Name	Road No.	Class	Construction By	Miles	Average Cost Per Mile	Total Cost	Date Survey Required	Sale Date F.Y.	Remarks
Mesa	3	Scales Lake	415	SH16	Operator	3.0	11,000	33,000	1962	1963	New Construction
Mesa	3	Indian Point	404	SH16	Operator	2.6	11,000	28,600	1962	1963	New Construction
Collbran	1	Owens Creek	431	SH16	Operator	9.3	4,000	37,200	1962	1963	Reconstruction
Mesa	3	Cottonwood	414	SH16	FS	4.0	15,000	60,000	1963	1965	New Construction
Lakes	2	Leroux Creek	420	SH16	FS	10.0	12,000	120,000	1964	1966	New Construction
		(Rights-of-way needed 1965 on Leroux Creek)									
Collbran	1	Wagon Park	419	SH16	Operator	4.5	13,000	58,500	1966	1968	New Construction
Collbran	1	Lambert	418	SH16	Operator	5.0	13,000	65,000	1967	1969	New Construction

SALES POLICY

An increase in local plant capacity is essential if the regulated cut is to be harvested in the Grand Mesa Working Circle. The needs of the working circle would be best met if the new industry is located in Collbran. Two sales, totalling 26 million feet, will be offered for sale prior to 1965 in the Collbran and Mesa Blocks in order to attract new industry to this area.

A three to five-year supply of timber will be kept under contract at all times. For mills with a capacity of three to five million feet annually, sales will range from 10 to 15 million feet.

In order to encourage expansion by the small local mills which are now cutting from 100 to 200 thousand feet a year, new sales will be from one to two million feet in size. Sales in the working circle will be appraised to Palisade or Delta.

Logging Methods

Logging will be in accordance with FSH2 2448.2, Management Guides for Engelmann spruce and associated species. Presale prescriptions will prescribe the type of skidding and brush disposal for each sale.

Tractor and cable skidding will be permitted in partial cut areas only upon written approval by the forest supervisor.

Merchantability Specifications

Product and Species	Specification
Sawtimber	
All Species	Tree Size: 10.0 inches D.B.H.
All Species	Top Diameter: 8.0 inches D.I.B.
All Species	Stump Height: 12 inches

In addition, no log is considered merchantable which is less than eight feet long or contains less than 10 board feet.

TIMBER STAND IMPROVEMENT

Regeneration

1. Planting

The planting program in the working circle is broken down into three major planting jobs. These are: Regeneration in the spruce-fir type, reforestation of oak brush, and the conversion of poor quality aspen stands to their original coniferous cover.

The total planting job planned for the period is summarized in Table 15.

In the spruce-fir type, 300 trees per acre will be planted in clear-cut areas following logging. Planting will be done three years after logging in order to allow time to dispose of cull material and yet take advantage of the ground scarification caused by logging equipment. On shallow, dry soils, consideration will be given to converting the stands to lodgepole pine. Where this occurs, planting will be at the rate of 600 trees per acre.

Table 15

The Planting Job 1961 - 1970

Type	Non-stocked	Understocked Seedling-Sapling Stands	Planting Needed on Areas Cut Prior to F.Y. 1960	Planting Needed on Areas Cut After F.Y. 1960	Total
Spruce-Fir	520	50	150	5,600	6,320
Ponderosa Pine	5,000[1]	-	-	350[2]	5,350
Total					11,670

1/ Reforestation of oak brush.
2/ Reconversion of aspen stands to original coniferous cover.

Areas in the spruce-fir type that are currently nonstocked or poorly stocked will be planted as they become accessible through new road construction. About half of the stands in this condition will be planted during the plan period.

Vestiges of ponderosa pine can be found through the oak brush type in the working circle. The forest has embarked on a program of reconverting this type to ponderosa pine with a planting goal of 500 acres annually.

As was previously mentioned in this plan, approximately 35 acres of the aspen type are clear cut annually. The majority of the stands are Site III or IV. These will be reconverted to conifers following logging. Although Table 16 shows that the reconversion will be to ponderosa pine, lodgepole pine, Douglas-fir, and Engelmann spruce may be planted, depending on elevation, exposure, and other site factors.

2. Measures to Aid Regeneration

In order to control insect populations, slash and cull material will be burned following clear cutting by groups in the spruce-fir type. This slash disposal will also aid natural regeneration in the type.

Contour trenching will be done prior to planting ponderosa pine in the oak brush type.

Thinning

Due to the economic factors involved, no thinning will be done in the spruce-fir type. These stands will be weeded following harvesting in order to reduce the incidence of subalpine fir and space stocking for optimum growth.

PROTECTION

Insects

Since the advent of fire protection on the working circle, losses due to the ravages of the spruce bark beetle (Dendroctonus engelmanni) have exceeded by far those due to fire. All of the timber operators now operating in the working circle are familiar with the 1940-1943 epidemic and the resulting salvage operations, and are therefore cognizant of the damage potential of this insect.

The planned action for insect control is as follows:

1. Train all field personnel, seasonal and permanent, in detecting and reporting procedures for spruce bark beetle outbreaks.

2. Remind each timber operator at the beginning of each operating season, to report insect infestations within their operating areas.

3. Train all new timber operators to recognize and report insect infestations of this kind.

4. Train all water commissioners and allotment riders to report any unusual insect activity.

5. Continue the present program of requiring slash and cull disposal on timber sale areas.

Disease

The greatest loss due to disease in the working circle is due to heart rot. Cull loss for this reason is greater in subalpine fir than any other species. The principal control measure to reduce loss due to disease will be the use of the diseased tree clause in all timber sales. Sanitation-hazard cuts in recreation zones will, of course, help reduce this loss. In addition, weedings will be aimed at reducing the proportion of subalpine fir in the spruce-fir type and will, therefore, help reduce this loss.

Fire

Fires on commercial forest lands have never been a serious problem in the working circle. Past selective cutting and slash disposal for insect control reasons in current operations have kept logging slash within acceptable levels. Recreation use of timber roads does present a potential hazard. Measures to prevent fire where this dual use exists are contained in the current fire prevention plan. These measures are as follows:

1. The protection organization and the supply of equipment will be maintained at a level adequate to keep fire occurrence within the annual par set up in the fire prevention plan.

2. Complete slash disposal will be required on the rights-of-way of all new roads.

3. Complete slash disposal will be required in all operations within the roadside strip of all permanent forest roads.

Livestock

All plantations will be fenced, if necessary, to protect the trees from livestock. The fences will be maintained until the trees are above browsing height. Area to be regenerated by natural means may be fenced, if necessary, to protect the reproduction from animal damage.

Wildlife

Plantations will not be established on heavily used winter deer range.

SUPPORTING DATA

Block Records

Within one year after the approval of this plan, a system of block records will be set up for each ranger district. This record will consist of an atlas-size binder containing a form R2-2400-19 and a map of each block within the ranger district. Records will be kept in sufficient detail to permit future breakdown into compartments.

Timber Inventory

The inventory data on which this plan revision is made was obtained from the Cooperative Forest Survey - Region 2 Inventory Program completed in 1959.

The inventory was conducted to standards prescribed and agreed to by Forest Survey of the Intermountain Forest and Range Experiment Station and the Division of Timber Management of Region 2 (Field Instruction for Forest Inventory, Rocky Mountain Region 1956). Forest Survey read the plots and processed the data. Region 2 delineated the types on aerial photographs, transferred the types to planimetric maps, and will print the final type maps.

Sampling Error

Volume data was based on 149 sample locations throughout the Grand Mesa and Uncompahgre Working Circles. Two plots were inventoried at each location. Table 16 shows the distribution of these locations by timber type, stocking class, and stand-size class. Data for timber types not occurring in the Grand Mesa Working Circle are not shown.

It was estimated that the 149 sample locations would give a sampling error in cubic foot volume of not to exceed five percent (one standard error) for the two working circles. The statistical accuracy for each working circle would be somewhat less. Forty four of the sample locations were taken on the Grand Mesa. Most of the locations were in the spruce-fir type. Using the coefficient of variation for the forest as a whole (67) would give a sampling error of less than 10 percent for the working circle.

Table 16

Area, Volume Per Acre, and Total Volume by Volume Stratums
Unreserved National Forest Lands

Volume Stratum						Volume Per Acre			Total Volume		
No.	Type	Stand-Size Class	Stocking Class	No. of Locations	Area Acres	Int.1/4" B.F.	Scribner Dec. C. B.F.	Cubic Feet	Int.1/4" M B.F.	Scribner Dec. C M B.F.	M Cubic Feet
VS-1	Douglas-fir	Small Sawtimber & Large Sawtimber	Medium	2(0)1/	185	16,444.09	13,601.16	3,675.82	3,042	2,516	680
VS-2	Douglas-fir	Small Sawtimber	Poor	6(0)	610	6,092.47	4,889.08	1,683.34	3,716	2,982	1,027
VS-6	Ponderosa Pine	Small Sawtimber	Poor	18(0)	15	2,980.00	2,391.65	702.83	45	36	11
	Spruce-Fir	Large Sawtimber	Medium	-	20	Use VS-8			374	316	78
VS-7	Spruce-Fir	Small Sawtimber	Well	4(2)	60	26,230.62	22,368.43	5,437.97	1,574	1,342	327
VS-8	Spruce-Fir	Small Sawtimber	Medium	64(26)	29,211	18,719.60	15,800.82	3,920.79	546,818	461,558	114,530
VS-9	Spruce-Fir	Small Sawtimber	Poor	28(12)	51,733	8,993.93	7,483.09	1,938.21	465,283	387,123	100,269
Subtotal Sawtimber				122	81,834	12,475.20	10,459.10	2,650.90	1,020,852	855,873	216,922
VS-10	Douglas-fir	Poletimber	Well & Medium	3(1)	100			1,220.82			122
VS-11	Ponderosa Pine	Poletimber	Poor	1	20			64.52			1
VS-12	Spruce-Fir	Poletimber	Well &Med	3(1)	7,790			1,751.49			13,644
	Spruce-Fir	Poletimber	Poor		2,460	Use VS-12					4,309
Subtotal Poletimber				7	10,370			1,745.30			18,076
VS-14	Spruce-Fir	Seedling-Sapling	All	1	270						--
	Spruce-Fir	Nonstocked			1,020						
Subtotal Conifers				130	93,494				1,020,852	855,873	234,998
VS-15	Aspen	Small Sawtimber	Medium	9(1)	1,290			2,999.95	50		3,870
VS-17	Aspen	Poletimber	Well	10(1)	78,877			1,728.60			136,347
	Aspen	Seedling-Sapling & Nonstocked			9,873						
Subtotal Hardwoods					90,040			1,771.10			140,217
Grand Total				149(44)	183,534						375,215

1/ Numbers in parentheses show number of locations in the Grand Mesa Working Circle. The numbers not in parentheses are for both working circles.

There is no sampling error for the area estimates since they were based upon a 100 percent mapping job.

Data Processing

Forest Survey, of the Intermountain Forest and Range Experiment Station, processed the data through the IBM section of the Pacific Southwest Station.

This was done in accordance with "Plan for Compilation of the Inter-Mountain Forest Survey, Rocky Mountain Area by IBM Method" October 1, 1956, by Robert M. Miller.

The NFA Tables are on file in the forest supervisor's office. These are:

Area

NFA 3 Block Area
NFA 4 W. C. Area by Ownership and Stratum

Volume

NFA 6 Net Volume per Acre by 10" D.B.H. Class
NFA 7 Net Volume per Acre by 2" D.B.H. Class

Growth and Mortality

Growth Table Y Average Ten-Year Growth and Mortality

Miscellaneous tables showing volume by county and sampling error.

Photostat copies of the plot tally sheets are on file in the forest supervisor's office.

Aerial photographs on which the photo interpretation was done are on file at the Denver Federal Record Storage Center.

Plates from which the type maps will be printed will be stored in the Division of Timber Management, Forest Service, Denver, Colorado.

Growth and Mortality Calculations

NFA Table 31 in the IBM binder gives the average adjusted 10-year growth increment and the 10-year mortality by growth stratums, species, and 2" D.B.H. classes. The volumes are shown in both board feet and cubic feet.

The growth stratum codes are as follows:

GS-01 = All conifer sawtimber stands.
GS-02 = All conifer poletimber stands.
GS-03 = All conifer seedling and sapling and nonstocked stands.
GS-04 = All hardwood stands.

The gross 10-year growth is based upon merchantability class (MC-1) trees. These are all live, merchantable trees. Mortality is shown under merchantability class (MC-7) trees. These are all mortality trees. The Forest Survey crews estimated the trees that died during the past five years. This volume was then doubled to put it on the same period as the growth. The growth was based on the past 10 years.

The periodic annual net growth per acre can be determined for any given species and D.B.H. class within a growth stratum, or the total of all species in D.B.H. classes within a growth stratum, by subtracting the volume shown for the average 10-year mortality (MC-7) from the average 10-year growth increment (MC-1) and dividing by 10.

Growth stratums do not correspond to volume stratums. The total volume of timber in the working circle and the allowable cuts are based upon volume stratums. It was, therefore, necessary to construct a growth and mortality table for the volume stratums using the data given in NFA Table 31. This was done by weighting the growth and mortality of the species in the growth stratums by the percent of each species in the volume stratums.

Table 32 shows the annual gross growth, mortality and annual net growth for the species within the growth stratum. Table 10 shows this data reflected into the annual net growth and annual mortality by species for the major types.

Table 17

Periodic Annual Growth and Mortality Volume Per Acre By Major Types

Based on Past 10 Years

Major Types	Gross Growth		Mortality		Net Growth		Acres	Total Annual			
								Mortality	Net Growth	Mortality	Net Growth
	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.		M B.F.	M B.F.	M C.F.	M C.F.
Douglas-fir Sawtimber	14.11	4.33	8.71	3.11	+5.40	+1.22	795	7	2	4	1
Spruce-Fir Sawtimber	95.49	74.48	19.19	5.54	76.30	13.79	81,024	1,355	6,182	449	1,117
Douglas-fir Poletimber	-	6.79	-	1.13	-	+5.66	100				1
Spruce-Fir Poletimber	-	11.09	-	9.94	-	+1.15	10,250			102	12
Aspen	-	3.64	-	1.55	-	+2.09	80,167			124	168
Total							172,336	1,562	6,184	679	1,299

Table 18

Average Net Volume Per Acre By Species and Crown Density Classes

DOUGLAS-FIR SAWTIMBER TYPE

Species	Crown Density Classes: Medium and Poor (VS-1) B.F.	C.F.	Poor (VS-2) B.F.	C.F.	Weighted Average B.F.	C.F.	Percent of Species Based on B.F.	C.F.	Wt. Annual Growth & Mortality: Net Growth B.F.	Mortality B.F.	Net Growth C.F.	Mortality C.F.
Douglas-fir	10,668.71	2,561.14	2,031.98	783.22	4,041.75	1,196.94	58.44	55.75	+2.28	.42	+.55	.09
White Fir	--	--	240.32	53.02	184.40	40.68	2.67	1.90	.01	.00	.00	.00
Subalpine Fir	935.63	383.59	1,624.45	436.38	1,464.16	424.10	21.17	19.75	-1.14	7.43	-.49	2.41
Engelmann Spruce	1,155.00	231.49	33.33	41.43	294.34	85.66	4.25	3.99	+4.01	.74	+.77	.16
Blue Spruce	--	--	20.54	5.04	15.76	3.87	.23	.18	+.24	.12	+.04	.03
Aspen	841.82	499.60	938.46	364.25	915.97	395.74	13.24	18.43			+.35	.42
Total	13,601.16	3,675.82	4,889.08	1,683.34	6,916.38	2,146.99	100	100	+5.40	8.71	+1.22	3.11

Area in Volume Stratum			
Acres	185	610	795
Percent	23.27	76.73	100

Table 19

Stock and Stand Table By D.B.H. and Crown Density Classes

DOUGLAS-FIR SAWTIMBER TYPE

Small Sawtimber Average Per Acre

10" Class	2" D.B.H. Class	Crown Density Classes: Medium & Poor (VS-1) No. of Trees	Medium & Poor (VS-1) Net Volume B.F.	Medium & Poor (VS-1) Net Volume C.F.	Poor (VS-2) No. of Trees	Poor (VS-2) Net Volume B.F.	Poor (VS-2) Net Volume C.F.	Weighted Averages No. of Trees	Weighted Averages Net Volume B.F.	Weighted Averages Net Volume C.F.
1	5.0-6.9	62.75		247.53	66.66		183.98	65.75		198.77
	7.0-8.9	62.50		347.84	54.14		283.29	56.09		298.31
	9.0-10.9	87.50	2,608.88	839.29	33.34	1,185.39	355.56	45.94	1,516.64	468.12
Subtotal		212.75	2,608.88	1,434.66	154.14	1,185.39	822.83	167.78	1,516.64	965.20
2	11.0-12.9	18.75	1,299.01	315.21	21.67	1,234.56	318.90	20.99	1,249.56	318.05
	13.0-14.9	12.50	1,426.23	318.07	7.50	692.54	157.68	8.66	863.27	195.00
	15.0-16.9	5.00	947.28	196.43	3.33	392.10	89.91	3.72	521.29	114.70
	17.0-18.9	5.00	864.50	180.66	4.17	705.22	157.87	4.36	742.28	163.17
	19.0-20.9	3.75	1,090.13	215.58	1.67	351.12	72.34	2.15	523.09	105.67
Subtotal		45.00	5,627.15	1,225.95	38.34	3,375.54	796.70	39.88	3,899.49	896.59
3	21.0-22.9	3.75	1,600.88	312.20	-	-	-	.87	372.52	72.65
	23.0-24.9	1.25	630.00	119.46	.42	147.76	29.10	.61	259.98	50.13
	25.0-26.9	-	-	-	-	-	-	-	-	-
	27.0-28.9	3.75	2,236.50	417.89	.42	180.39	34.71	1.19	658.84	123.87
	29.0-30.9	1.25	897.75	165.66	-	-	-	.29	208.91	38.55
Subtotal		10.00	5,365.13	1,015.21	.84	328.15	63.81	2.96	1,500.25	285.20
Grand Total		267.75	13,601.16	3,675.82	193.32	4,889.08	1,683.34	210.62	6,916.38	

Area in Volume Stratum			
Acres	185	610	795
Percent	23.27	76.73	100

Table 20

Average Net Volume Per Acre By Species and Crown Density Classes

SPRUCE-FIR SAWTIMBER TYPE

Species	Crown Density Classes						Weighted Average		Percent of Species Based on		Weighted Annual Growth and Mortality			
	Well (VS-7)		Medium (VS-8)		Poor (VS-9)						Net Growth	Mor-tality	Net Growth	Mor-tality
	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B. F.	C.F.	B.F.	B.F.	C.F.	C.F.
Douglas-fir			78.42	18.41			28.28	6.64	.27	.25	+.01	.00	.00	.00
Subalpine Fir	4,124.56	1,304.84	2,459.53	832.06	917.07	371.96	1,475.53	538.53	14.06	20.28	-.24	4.93	-.51	2.47
Engelmann Spruce	16,882.17	3,751.90	12,493.39	2,854.94	6,226.94	1,425.34	8,494.09	1,942.48	80.95	73.15	+76.30	14.14	+14.14	2.89
Blue Spruce			65.93	16.52			23.77	5.96	.23	.22	+.23	.12	.04	.04
Aspen	1,361.70	381.23	703.55	198.86	339.06	140.91	471.21	161.97	4.49	6.10	-	-	.12	.14
Total	22,368.43	5,437.97	15,800.82	3,920.79	7,483.09	1,938.21	10,492.88	2,655.58	100.00	100.00	+76.30	19.19	+13.79	5.54

Area in Volume Stratum				
Acres	60	29,211	51,733	Total 81,004 (70,381)
Percent	.07	36.06	63.87	100.00

Table 21

Stock and Stand Table By D.B.H. and Crown Density Classes

SPRUCE-FIR SAWTIMBER TYPE

Small Sawtimber Average Per Acre

D.B.H. Class		Crown Density Classes: Well (VS-7)			Medium (VS-8)			Poor (VS-9)			Weighted Averages		
10" Class	2" D.B.H. Class	No. of Trees	Net Volume B.F.	Net Volume C.F.	No. of Trees	Net Volume B.F.	Net Volume C.F.	No. of Trees	Net Volume B.F.	Net Volume C.F.	No. of Trees	Net Volume B.F.	Net Volume C.F.
1	5.0-6.9	68.75		284.84	47.26		174.68	41.97		136.93	43.90		150.65
	7.0-8.9	62.50		426.65	53.12		365.64	25.89		175.62	35.73		244.32
	9.0-10.9	37.50	2,059.69	500.48	40.62	2,029.93	500.31	31.25	1,443.82	361.61	34.63	1,655.60	411.72
Subtotal		168.75	2,059.69	1,211.97	141.00	2,029.93	1,040.63	99.11	1,443.82	674.16	114.26	1,655.60	806.69
2	11.0-12.9	41.26	3,430.17	802.33	27.64	2,302.67	527.99	16.61	1,276.73	294.77	20.60	1,648.19	379.23
	13.0-14.9	33.75	4,776.85	1,024.96	20.72	2,685.12	581.27	7.59	875.82	192.41	12.34	1,530.98	333.22
	15.0-16.9	16.88	3,234.80	676.13	13.61	2,520.16	529.38	5.36	892.62	188.31	8.34	1,481.15	311.64
	17.0-18.9	10.63	2,804.12	577.23	7.08	1,794.07	368.32	4.38	1,062.33	216.84	5.36	1,327.42	271.72
	19.0-20.9	6.26	2,165.69	435.64	5.21	1,763.59	356.65	2.14	687.76	137.77	3.25	1,076.64	216.91
Subtotal		108.78	16,411.63	3,516.29	74.26	11,065.61	2,363.61	36.08	4,795.26	1,030.10	49.89	7,064.48	1,512.70
3	21.0-22.9	1.88	905.63	177.18	2.74	1,189.11	237.08	.45	206.47	40.72	1.28	561.30	111.62
	23.0-24.9	.63	352.13	67.03	.86	486.43	92.66	1.16	655.78	124.71	1.05	594.50	113.12
	25.0-26.9	1.25	775.13	145.24	.71	475.57	88.08	.18	145.79	26.32	.37	265.15	48.67
	27.0-28.9	.63	605.82	107.29	.23	188.48	34.07	.18	159.78	28.52	.20	170.44	30.58
	29.0-30.9	-	-	-	.16	151.91	26.89	.09	76.19	13.68	.12	103.44	18.43
Subtotal		4.39	2,638.71	496.74	4.70	2,491.50	478.78	2.06	1,244.01	233.95	3.02	1,694.83	322.42
4	31.0-32.9	-			.16	159.48	28.36					57.51	10.23
	33.0-34.9				-	-	-						
	35.0-36.9				.04	54.30	9.41					19.58	3.39
	37.0-38.9				-	-	-						
	39.0-40.9	.63	1,258.40	212.97								.88	.15
Subtotal		.63	1,258.40	212.97	.20	213.78	37.77					77.97	13.77
Grand Total		282.55	22,368.43	5,437.97	220.16	15,800.82	3,920.79	137.25	7,483.09	1,938.21	167.17	10,492.88	2,655.58

Area in Volume Stratum				
Acres	60	29,211	51,773	81,004
Percent	.07	36.06	63.87	100

Table 22

Average Net Volume Per Acre By Species and Crown Density Classes

SPRUCE-FIR POLETIMBER

Species	Well & Medium (VS-12) C.F.	Percent of Species Based on: C.F.	Weighted Annual Growth and Mortality (C.F.) Net Growth	Mortality
Douglas-fir	14.47	.83	+.06	0.00
Subalpine Fir	687.02	39.22	-5.98	9.82
Engelmann Spruce	934.30	53.34	+7.09	0.00
Aspen	115.70	6.61	-.02	.12
Total	1,751.49	100.00	+1.15	9.94

Area in Volume Stratum
Acres 7,790

Table 23

Stock and Stand Table By D.B.H. and Crown Density Classes

SPRUCE-FIR POLETIMBER TYPE

2" D.B.H. Classes	Average Per Acre Well and Medium (VS-12) No. of Trees	Net Volume C.F.
5.0-6.9	108.33	347.07
7.0-8.9	25.00	142.50
9.0-10.9	66.67	649.10
Subtotal	200.00	1,138.67
11.0-12.9	13.34	215.32
13.0-14.9	9.17	232.99
15.0-16.9	4.16	164.51
19.0-20.9		
Subtotal	26.67	612.82
Grand Total	226.67	1,751.49
Area in Volume Stratum Acres	10,250	

Table 24

Average Net Volume, Growth and Mortality Per Acre

ASPEN TYPE

Species	Sawtimber: Medium (VS-15) B.F.	Sawtimber: Medium (VS-15) C.F.	Sawtimber: Percent of Species Based on B.F.	Sawtimber: Percent of Species Based on C.F.	Poletimber: Well (VS-17) C.F.	Poletimber: Percent of Species Based on C.F.	Weighted Annual Growth & Mortality: Net Growth C.F.	Weighted Annual Growth & Mortality: Mortality C.F.
Douglas-fir	20.85	5.09	.19	.17	101.42	5.86	+.40	.00
Subalpine Fir	765.27	375.33	6.89	12.51	10.18	.59	-.09	.17
Engelmann Spruce	1,959.93	431.69	17.65	14.39	251.31	14.54	+1.95	.01
Blue Spruce	485.80	109.53	4.38	3.65	28.11	1.63	+ .01	.01
Aspen	7,869.47	2,078.31	70.89	69.28	1,337.58	77.38	-.26	1.42
Total	11,101.32	2,999.95	100	100	1,728.60	100	+2.01	1.61

Area in Volume Stratum			
Acres	1,220	78,877	80,097
Percent	1.52	98.48	100

Table 25

Stock and Stand Table By Stand Size Classes and D.B.H. Classes

ASPEN TYPE

Average Per Acre

10" Class	2" D.B.H. Class	Sawtimber Type (VS-15) Crown Density Classes No. of Trees	Net Volume B.F.	Net Volume C.F.	Poletimber Type (VS-17) Crown Density Classes No. of Trees	Net Volume C.F.
1	5.0-6.9	44.45		137.98	177.79	499.61
	7.0-8.9	63.89		462.83	61.12	364.60
	9.0-10.9	33.33	1,844.19	442.90	16.67	200.58
Subtotal		141.67	1,844.19	1,043.71	255.58	1,064.79
2	11.0-12.9	43.89	3,683.82	811.58	8.61	143.17
	13.0-14.9	19.17	2,218.20	473.29	6.95	176.23
	15.0-16.9	6.66	1,128.39	231.80	2.77	96.73
	17.0-18.9	3.62	876.61	176.17	2.50	116.61
	19.0-20.9	1.67	573.39	112.80	1.12	73.12
Subtotal		75.01	8,480.41	1,805.64	21.95	605.86
3	21.0-22.9	1.12	400.43	81.01	.28	18.58
	23.0-24.9	.28	171.77	32.20	.28	28.11
	25.0-26.9		-	-	.28	24.12
	27.0-28.9	.28	204.52	37.39		
	29.0-30.9		-			
Subtotal		1.68	776.72	150.60	.84	70.81
Grand Total:		218.36	11,101.32	2,999.95	278.37	1,741.46

Area in Volume Stratum			
Acres	1,290	78,877	80,167
Percent	1.61	98.39	100

BLOCK MAP

GRAND MESA WORKING CIRCLE

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
RICHARD E. McARDLE, CHIEF

GRAND MESA NATIONAL FOREST

COLORADO
SIXTH AND UTE PRINCIPAL MERIDIANS
1959

Scale
1 INCH = 1 2 3 4 5 Miles

LEGEND

- National Forest boundary
- Adjacent National Forest boundary
- Highway, hard surface
- Good motor road, graded gravel
- Motorway, improved dirt
- Poor motorway, unimproved dirt
- Trail
- Railroad
- Power line
- Telephone line
- Municipal and other airports
- U. S. Highway route
- State highway route
- County route
- Forest route
- Supervisor's Headquarters
- District Ranger Station (Report Fires here)
- Guard or Ranger Station (Not permanently occupied)
- Fire tool cache
- Permanent lookout station
- Improved forest campground C.G. or picnic ground P.G.
- House, cabin or other building
- Triangulation station
- Schoolhouse
- Airway beacon
- Corral
- Mine
- Sawmill
- Cave
- National Forest land

Revised 3/60

FRUITA DIVISION

Fruita Division is included in the UNCOMPAHGRE WORKING CIRCLE

FOREST SERVICE MAP—CLASS "A"

Compiled and drawn at Regional Office, Denver, Colo.—1959 from Forest Service and S.C.S. planimetric maps and U.S.G.S. topographic maps constructed by photogrammetric methods from aerial photographs.
Control by U. S. Coast and Geodetic, U. S. Geological Survey and Forest Service Surveys.

KEY MAP
ROCKY MOUNTAIN REGION

LEGEND

Areas to be Cut over During Planning Period FY 1962-1971

(Rd. No.) Access Roads Needed to Harvest this Timber

Longitude west from Greenwich

Polyconic projection
North American datum.

TIMBER MANAGEMENT PLAN

UNCOMPAHGRE WORKING CIRCLE

FY 1962 - 1971

GRAND MESA-UNCOMPAHGRE
NATIONAL FOREST
COLORADO

Region 2

Prepared By:

/S/ Robert P. Newlin — March 28, 1961

Approved By:

/S/ James O. Folkestad, Acting Forest Supervisor — March 28, 1961

/S/ H. C. Eriksson, Acting Regional Forester — August 22, 1961

/S/ W. S. Swingler, Acting Chief — October 11, 1961

(D.J.M.)

Reviewed By:

Regional Office	Initials	Date
Engineering	M.L.	8/16/61
Timber Management	C.C.A.	8/16/61

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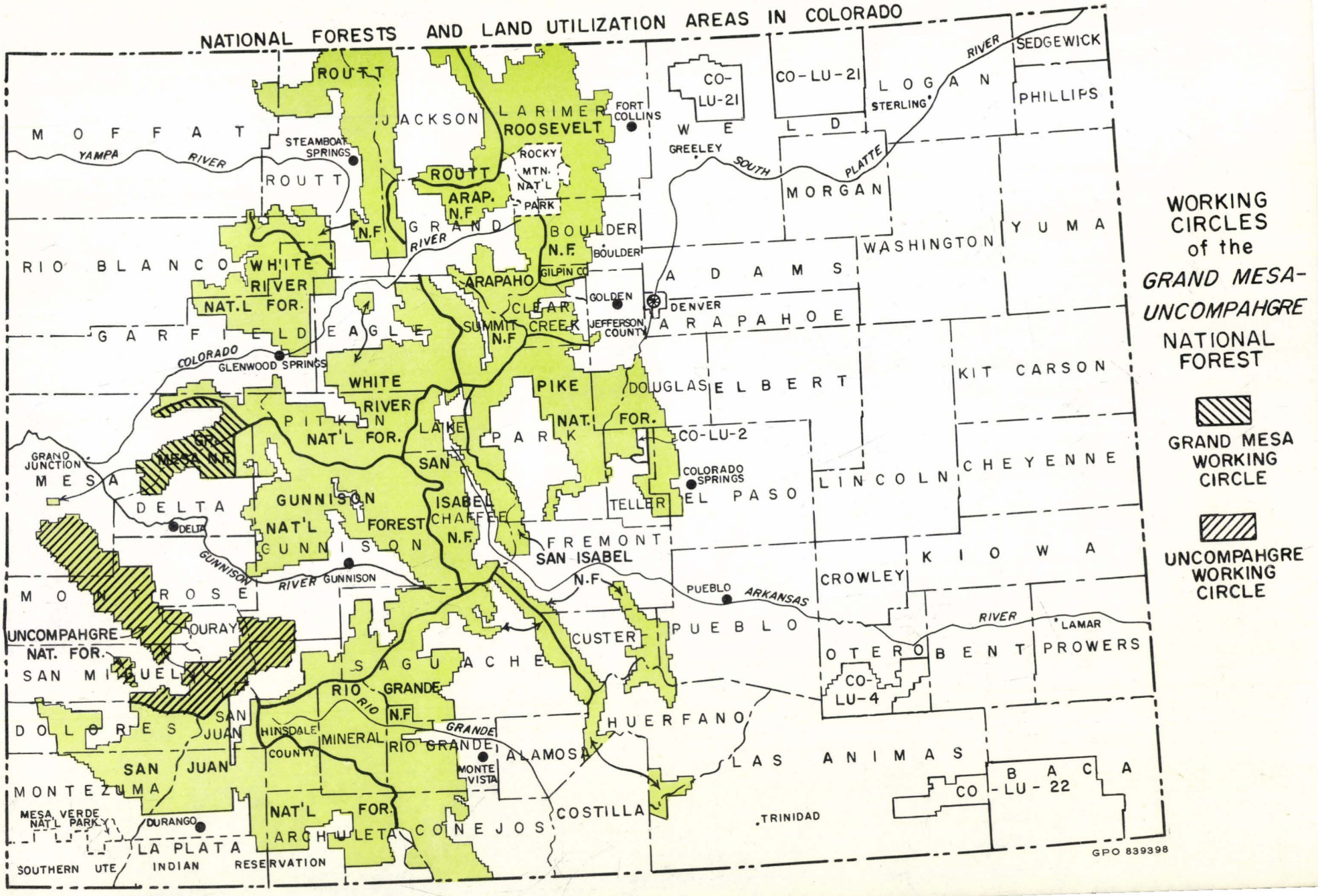

NATIONAL FORESTS AND LAND UTILIZATION AREAS IN COLORADO
ROUTT
JACKSON
LARIMER
ROOSEVELT
FORT COLLINS
CO-LU-21
CO-LU-21
SEDGEWICK
PHILLIPS
LOGAN
STERLING
RIVER
MOFFAT
YAMPA
RIVER
STEAMBOAT SPRINGS
ROUTT
ROCKY MTN. NAT'L PARK
ARAP. N.F.
GREELEY
SOUTH PLATTE
MORGAN
N.F.
GRAND
RIVER
BOULDER
BOULDER
WASHINGTON
YUMA
RIO BLANCO
WHITE RIVER NAT.L FOR.
ARAPAHO
GILPIN CO
ADAMS
GOLDEN
DENVER
CLEAR CREEK
JEFFERSON COUNTY
ARAPAHOE
GARFIELD
EAGLE
SUMMIT
N.F.
COLORADO
GLENWOOD SPRINGS
WHITE RIVER
PIKE NAT. FOR.
DOUGLAS
ELBERT
KIT CARSON
PITKIN NAT'L FOR.
LAKE
PARK
CO-LU-2
GRAND MESA
GRAND JUNCTION
MESA
SAN ISABEL
COLORADO SPRINGS
LINCOLN
CHEYENNE
DELTA
GUNNISON NAT'L FOREST
ISABEL
CHAFFEE
N.F.
TELLER
EL PASO
DELTA
GUNNISON
RIVER
GUNNISON
FREMONT
SAN ISABEL
N.F.
CROWLEY
KIOWA
MONTROSE
PUEBLO
ARKANSAS
RIVER
LAMAR
OURAY
UNCOMPAHGRE NAT. FOR.
CUSTER
PUEBLO
OTERO
BENT
PROWERS
SAN MIGUEL
SAGUACHE
RIO GRANDE
RIO GRANDE
N.F.
CO-LU-4
SAN JUAN
HINSDALE COUNTY
MINERAL
RIO GRANDE
HUERFANO
DOLORES
ALAMOSA
LAS ANIMAS
SAN JUAN
MONTE VISTA
BACA
MONTEZUMA
CO-LU-22
MESA VERDE NAT'L PARK
DURANGO
NAT'L FOR.
COSTILLA
TRINIDAD
ARCHULETA
CONEJOS
LA PLATA
SOUTHERN UTE INDIAN RESERVATION
WORKING CIRCLES of the GRAND MESA-UNCOMPAHGRE NATIONAL FOREST
GRAND MESA WORKING CIRCLE
UNCOMPAHGRE WORKING CIRCLE
GPO 839398

SUMMARY OF PLAN

Table 1

Annual Allowable Cut

Type	Area Acres	Volume
Ponderosa pine (P9)	2300	6.00 MMBF
Spruce-Fir-Douglas-fir group(SF9 & D9)	2400	26.00 MMBF
Aspen (A9 & A8) group	3000	4.80 MMCF

Estimated Volume by Species from Regulated Area

Species	Sawtimber Types: Ponderosa Pine MMBF	Sawtimber Types: Spruce Fir MMBF	Total MMBF	Products: Aspen Type MMCF	est	Total est
Engelmann Spruce	0.03	18.70	18.730	0.69	2,800	21,530
Ponderosa Pine	5.50	--	5.500	0.03	,120	5,620
Subalpine Fir	0.05	4.20	4.250	0.06	,240	4,490
Douglas-fir	0.30	1.30	1.600	0.27	1,080	2,680
Blue Spruce	0.02	0.20	0.220	0.08	,320	540
Aspen	0.10	1.60	1.700	3.67	14,680	14,380
Total	6.00	26.00	32.00	4.80		

Table 2

AREA-ACRES BY OWNERSHIP,
LAND CLASSIFICATION AND STAND SIZE CLASS

Land Classification and Stand Size Class	National Forest	State	Private	Total
Unreserved Commercial Forest Land				
Large Sawtimber	6,216	-	-	6,216
Small Sawtimber	210,705	220	12,014	222,939
Poletimber	197,728	360	25,222	223,310
Seedling-Sapling	24,186	300	5,008	29,494
Non-Stocked	4,510	-	100	4,610
Sub-Total	443,445	880	42,344	486,669
Non-Commercial	286,753	550	18,043	305,346
Non-Forest	149,333	1,170	38,477	188,980
Reserved	69,720	-	-	69,720
Grand Total	949,251	2,600	98,864	1,050,715

Table 3

Area-Acres of Commercial National Forest Land
By Timber Types, Stand Size and Stocking Class

National Forest Ownership Only

Timber Type	Stand Size Classes: Large Sawtimber: Well	Large Sawtimber: Med.	Large Sawtimber: Poor	Large Sawtimber: Total	Small Sawtimber: Well	Small Sawtimber: Med.	Small Sawtimber: Poor	Small Sawtimber: Total	Poletimber: Well	Poletimber: Med.	Poletimber: Poor	Poletimber: Total	Seedling-Sapling: Well	Seedling-Sapling: Med.	Seedling-Sapling: Poor	Seedling-Sapling: Total	Non-Stocked	Total
Douglas-fir			185	185		1,560	12,209	13,769	1,334	1,578	864	3,776	70			70		17,800
Ponderosa Pine		210	5,791	6,001		320	85,745	86,065	20	1,540	4,199	5,759	64	20	270	354	1,880	100,059
White Fir						40	175	215										215
Spruce-Fir	50	36,583	66,058	102,691 (71.2%)	10,766	21,187	5,481	37,434 (25.9%)	365	530	670	1,565 (1.1%)					2,710 (1.8%)	144,430 (100%)
Sub-Total	50	38,503	164,187	202,740	12,120	24,305	10,544	46,969	499	550	940	1,989					4,490	262,504
Aspen				7,965				150,759				22,197					20	180,941
Grand Total				6,216				210,705				197,728				24,186	4,510	443,445

Table 4

TOTAL VOLUME - COMMERCIAL FOREST LAND - BY OWNERSHIP

	National Forest	State	Private	Total
Sawtimber, MMBF	1,395	1	80	1,476
Products, MMCF	357	0	32	389

Table 5

TOTAL VOLUME OF SAWTIMBER BY SPECIES IN SAWTIMBER TYPES

National Forest Unreserved Lands MMBF

Sawtimber Types	Species							
	Engelmann Spruce	Ponderosa Pine	Subalpine Fir	Douglas-fir	Blue Spruce	White Fir	Aspen	Total
Spruce-Fir	869.63	-	150.77	2.90	2.36	-	48.22	1073.88
Ponderosa Pine	1.23	217.22	1.78	10.62	0.97	-	5.29	237.11
Douglas-fir	2.42		21.46	43.42	0.25	2.94	12.93	83.42
Total	873.28	217.22	174.01	56.94	3.58	2.94	66.44	1394.41
Percent	62.5	15.6	12.5	4.1	0.3	0.2	4.8	100

Table 6

Periodic Annual Net Growth for Past 10 Years

Trees 5.0" D.B.H. and Larger

Major Type	Cubic Feet Per Acre	Total for Type MCF
Ponderosa Pine		
Sawtimber	2.12	195
Poletimber	0.46	3
Spruce-Fir		
Sawtimber	13.95	2,460
Poletimber	1.15	43
Douglas-fir		
Sawtimber	1.03	14
Poletimber	5.60	21
Total		2,736

Table 7

Recommended Rotation

Type	Years
Ponderosa Pine	160
Engelmann Spruce	140

Revision Date -- June 30, 1971

TIMBER MANAGEMENT PLAN

UNCOMPAHGRE WORKING CIRCLE

Grand Mesa-Uncompahgre National Forest

INTRODUCTION

This working circle plan outlines the action program for the ten-year period starting with F.Y. 1962. The prescribed action is necessary to meet the long-term objectives in the General Timber Management Statement for the Grand Mesa-Uncompahgre National Forest.

This plan will be revised by June 30, 1971, or earlier,if conditions warrant.

Detailed forest survey data from which this plan was based are on IBM sheets in a folder labeled"1957 Forest Survey". This folder is on file in the forest supervisor's office in Delta, Colorado.

Compartment records containing descriptions, maps, area and volume by types are filed in a timber management atlas. These atlases are maintained annually and filed in the district rangers' offices.

SUMMARY OF RESULTS UNDER PREVIOUS PLANS

This working circle plan now combines the areas of the Uncompahgre Valley, San Miguel, Alpine-Ouray, Telluride, and Naturita Working Circles that comprise the Uncompahgre National Forest. The total annual allowable cut was 14,500 M B.F. for the five working circles.

Harvesting Accomplishments

For the past ten-year period (F.Y. 1951-1960) the actual cut was 83,148 M B.F., or 57% of 145,000 M B.F. allowable cut. Note Graph No. 1. Also during this period, about 65,500 M B.F. of dead bug timber was harvested and not charged to the allowable cut. The accelerated timber sale program of the past three or four years has helped to increase the annual cuts.

The actual cut for the past ten years would have been much higher with the following: (1) A greater demand for lumber; (2) less prejudice towards native lumber; (3) a more agressive timber sale program; (4) an accelerated access road program.

Timber Stand Improvement

1. Thinning

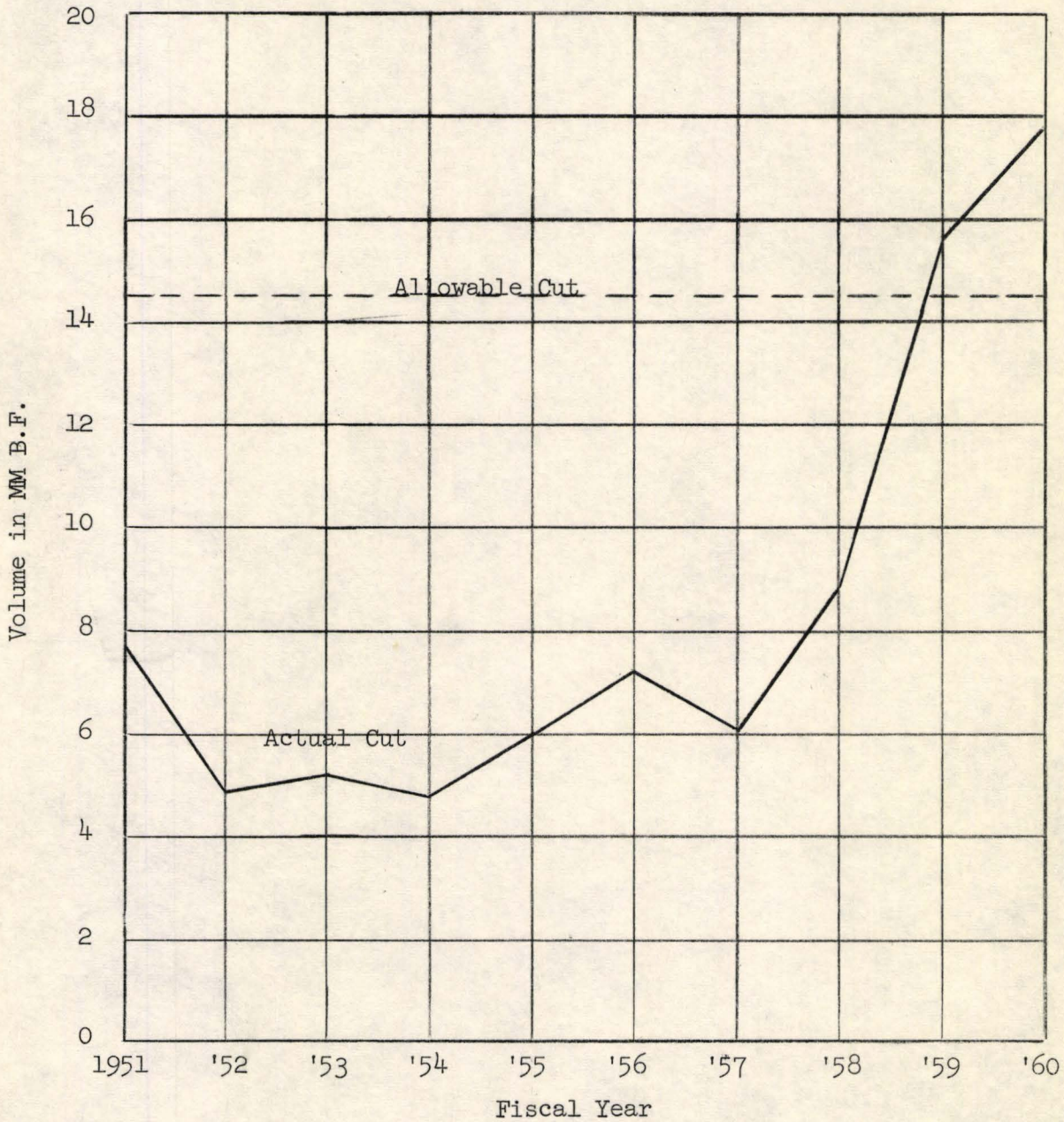
   In the past ten years 1,014 acres have been non-commercially thinned in the ponderosa pine type. This was accomplished in cutover areas using approximately $20,041 of sale area betterment funds.

2. Planting

   Starting in 1955 about 434 acres were regenerated on the Uncompahgre Working Circle. Most of this has been ponderosa pine planting. The survival in over half of this acreage has been too low to be considered a success.

Figure 1

ACTUAL CUT AND ALLOWABLE CUT
FOR PAST TEN YEARS



Protection Accomplishments

1. Disease Control

Dwarfmistletoe has been controlled in the past few years in ponderosa pine sale areas through cutting all infested trees of merchantable size. The smaller infested trees are removed with timber stand improvement projects.

2. Insect Control

The Cone compartment was hit hard by an Engelmann spruce bark beetle epidemic in the early 1950's. Control work has been done on 13,000 acres. Individual trees were sprayed and 65.5 MM B.F. of bug-killed timber was harvested in the period.

3. Fire Control

There were 149 fires on the working circle during the last ten years. The fires burned approximately 320 acres of commercial timber type with about 290 acres of pine type burned in one fire in 1960.

Area Put Into Optimum Growing Condition

Approximately 1,200 acres of ponderosa pine type have been put into good growing condition with thinning and planting.

MANAGEMENT OBJECTIVES

The objective of this plan is to outline steps needed to get the working circle on a sustained yield capacity harvest with the commercial timber types in a good growing condition by the year 2000. Protection from fire, insects, and diseases will be accomplished.

The following accomplishments will be needed in the ten-year period, F.Y. 1962-1971:

1. Attain the allowable cut by 1967. This will necessitate the establishment of additional industry.

2. Plant 57,800 acres during the period. Plant 30,000 acres mechanically with ponderosa pine in brush areas. There will be 6,000 acres of non-stocked and cutover spruce-fir type to be planted with lodgepole pine and Engelmann spruce. There are 21,800 acres of ponderosa pine type that is classified non-stocked, poorly stocked, and cutover that will require fill-in planting.

3. Maintain adequate stocking in ponderosa pine by both commercial and non-commercial thinnings.

4. Control dwarfmistletoe in ponderosa pine by harvesting infected merchantable trees and cutting the smaller trees during the thinning programs.

5. Hold insect populations endemic during the period. This will be accomplished with a good detection program and by requiring piling and burning of spruce slash on all sales.

6. Keep fire damage under the annual par established in the fire prevention plan for the forest. The tolerable annual burn for the 443,445 acres of commercial forest types is 29 acres.

MULTIPLE-USE COORDINATION

Timber cutting within special treatment zones, such as travel, water, recreation, etc., will be in accordance with the practices described in the Timber Management Guides FSH2 2442.8, and the Multiple-Use Management Guide for the Western Colorado Subregion.

Presale prescriptions will set up the requirement for each sale in accordance with Land Management District or Block Plan.

Plantations established in the oak brush will be fenced, if necessary, to protect the trees.

No other conflicts with other uses are anticipated under the management direction or instructions provided in above guides.

REGULATION

Regulation will be by area with the allowable cut expressed in both acres and volume for the following types:

Ponderosa pine sawtimber (P9)
Spruce-fir sawtimber (SF9)
Aspen sawtimber and poletimber (A9 & A8)

There is a small amount of Douglas-fir sawtimber type (D9) which is included with the spruce-fir type. Any timber cut in a D9 type will be credited to the SF9 allowable cut. The symbols are standard Forest Survey Map symbols. Likewise, the small acreage of white fir is included with the ponderosa pine type for management purposes.

There are no unregulated timber types within the working circle .

Control

Control of the allowable cut will be by type area and not species or products cut within the type. Sales programs will be by species and products and will be in sufficient volumes to meet area control objectives. Sales should normally exceed allowable cut objectives, otherwise the average annual cut will fall short of the allowable cut for the planning period. Emphasis will be placed on increasing the current actual cut until experience shows the allowable cut objectives have been accomplished.

The control of the cut will be by 10-year periods. Undercuts that have built up during the period may be cut during the remainder of the period provided that the total cumulative cut for the period does not exceed the periodic allowable cut by more than ten percent.

Overcuts and undercuts will not be carried forward into the next ten-year planning period.

If the present relationship between area and volume is found to be excessively variable for the whole working circle, the volume allowable cut will be adjusted to be compatible with area regulation. No adjustments will be made prior to the end of the first five-year period.

The financed cut and sell quota for any one year is based on the expected volume of business for the year. It should be sufficient to meet the allowable cut objectives for the working circle as scheduled in this plan.

Rotations

In order to meet the long-range objectives, as brought out in the General Timber Management Statement, a 40-year adjustment period is used for converting wild to managed stands. This period is used for calculating the allowable cut.

Rotations for the working circle will be determined prior to the next revision of this plan. In the meantime, the region's average rotations will be used when needed. These are:

Ponderosa pine type - 160 years
Spruce-fir type - 140 years

These include five years for regeneration after logging.

Method of Cutting

Region 2's Management Guide for Ponderosa Pine, Engelmann Spruce and Aspen, FSH2 2442.8, will be applied in designating timber for cutting. These guides provide for clearcutting in patches, groups or strips with even-age management as the objective. Uneven-age management will be limited to occupancy areas, such as recreation, roadside strips, etc.

Growing Stock

The forest inventory 1957-58 divides the major timber types into stand size classes and stocking classes or crown density classes. The definitions for the classes are contained in Forest Survey Standards FSH 4819 and the field instructions for the 1955-58 project.

The standard stand size classes are:

Sawtimber	- 11.0" D.B.H. and larger
Poletimber	- 5.0" to 10.9" D.B.H.
Seedling-saplings	- 1.0" to 4.9" D.B.H.
Non-stocked	- Less than 0.9" D.B.H.

Sawtimber stands have a net volume of 1,500 board feet (International $\frac{1}{4}$" Log Rule) or more per acre in trees 11.0" D.B.H. and larger. Poletimber stands are those that fail to meet the definition for sawtimber stands, are at least 10 percent stocked with trees 5.0" D.B.H. and larger and the plurality of cubic volume is in trees 5.0" to 10.9" D.B.H. Seedling-sapling stands are those that do not meet the above conditions and are at least 10 percent stocked with trees 1.0" to 4.9" D.B.H. Non-stocked stands are those that are less than 10 percent stocked and do not meet the minimum conditions for the above classes.

Stocking classes or crown density classes refer to the extent to which growing space is utilized by present growing stock trees of commercial species. The classification is based on the percent of crown closure. The stocking classes for sawtimber stands, as used in this plan, are for the percent of closure of sawtimber crowns. The stocking classes for poletimber and seedling-sapling size stands are based on crown closure for all trees regardless of their size.

Classification	Percent of Crown Closure
Non-stocked	0-9
Poorly stocked	10-39
Medium stocked	40-69
Well stocked	70+

Condition classes were not used in the survey. The breakdown into stand-size classes does not reflect the growth potential into the next size class.

Table 8

Showing Gross Area by Stand-Size Classes and Adjustment for Operability

Stand-Size Classes	Ponderosa Pine-White Fir Group			Spruce-Fir-Douglas-fir Group			Aspen		
	Gross Area	Operable Area		Gross Area	Operable Area		Gross Area	Operable Area	
	Acres	M Acres	Percent	Acres	M Acres	Percent	Acres	M Acres	Percent
	1/			2/					
Sawtimber	92,281	88	93	116,675	88	72	7,965	8	5
Poletimber	5,759	5	5	41,210	31	25	150,759	120	81
Seedling-Sapling	354	-	0	1,635	1	1	22,197	20	14
Non-stocked	1,880	2	2	2,710	2	2	20	-	0
Total	100,274	95	100	162,230	122	100	180,941	148	100

1/ 99.8 percent is Ponderosa Pine type.
2/ 88.0 percent is Spruce-Fir type.

The 1957 forest inventory did not type by age classes. The only available data on age comes from the site trees. The inventory obtained the age of two site trees at each plot. For this plan the distribution of age classes of site trees is used to indicate the magnitude of the types in each age class.

Table 9

Showing the Distribution of Sawtimber-Size
Site Trees By Age Classes

Age Classes Years	Species: Ponderosa Pine: Number of Trees	Ponderosa Pine: Percent	Engelmann Spruce: Number of Trees	Engelmann Spruce: Percent
40-59	2	4	4	2
60-79	10	22	14	7
80-99	6	13	30	15
100-119	7	16	29	15
120-139	8	17	30	16
140-159	5	11	88*	45
160+	8	17	-	-
Total	46	100	195	100

*140 years and older.

The preceding table indicates that 45 percent of the ponderosa pine sawtimber type will reach or be over-matured during the next 40 years. Also that 76 percent of the spruce-fir sawtimber type will have reached maturity or over-maturity during the next 40 years. The site trees are distributed over the entire Grand Mesa-Uncompahgre National Forest. The younger age classes are more concentrated on the Grand Mesa. This would indicate that most of the spruce-fir sawtimber type on the Uncompahgre Working Circle has reached or passed maturity and should be cut.

The aspen sawtimber and poletimber types were fire generated during the early settlement of the country. These trees are now 90-100 years of age and have reached the pathological rotation. Sites I and II should be maintained in aspen, while the poorer sites will be converted back to conifers.

Growth and Mortality

Growth and mortality calculation is explained under "Supporting Data". The growth and mortality for the major types are shown in Table 10.

Based on the past ten years, the total annual net growth is 8,756 M B.F. and mortality is 2,097 M B.F. in the two regulated coniferous sawtimber types on the working circle.

Figure 2

AGE AND D.B.H. OF SITE TREES
(Forest Survey)

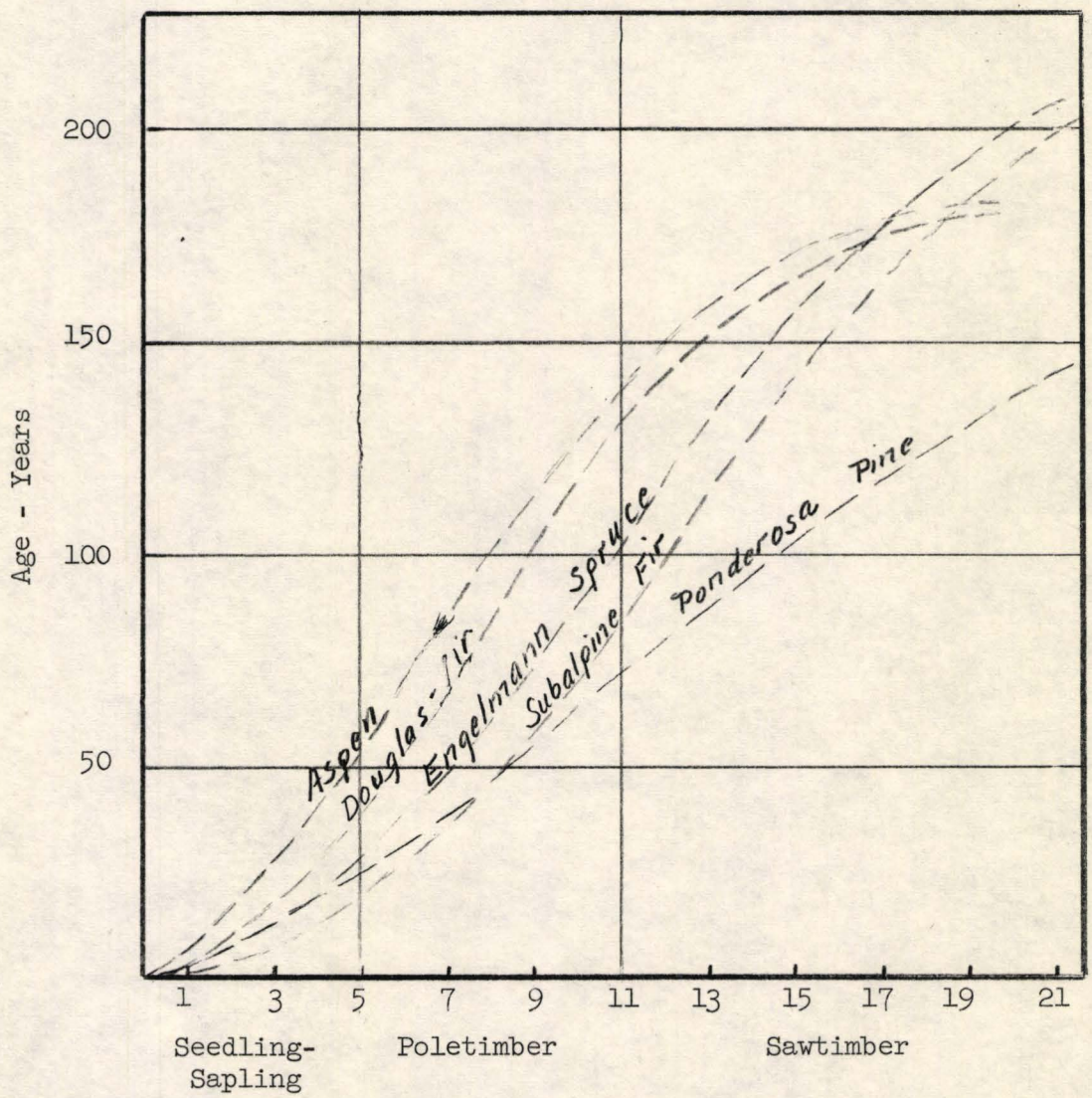


Table 10

Periodic Annual Growth and Mortality
Volume Per Acre By Major Types

Based on Past 10 Years

Major Types	Per Acre						Total Annual				
	Gross Growth		Mortality		Net Growth		Total Area in Type	Mortality	Net Growth	Mortality	Net Growth
	BF	CF	BF	CF	BF	CF	Acres	MBF	MBF	MCF	MCF
Douglas-fir Sawtimber	13.76	4.45	10.08	3.42	+3.68	+1.03	13,954	141	51	48	14
Ponderosa Pine Sawtimber	11.91	2.61	1.37	.49	+10.54	+2.12	92,066	126	970	45	195
Spruce-Fir Sawtimber	94.99	18.79	19.19	4.84	+75.80	+13.95	102,721	1,971	7,786	497	1,433
Douglas-fir Poletimber		6.72		1.12		15.60	3,776			4	21
Ponderosa Pine Poletimber		.46		0.00		+.46	5,759			00	3
Spruce-Fir Poletimber		11.09		9.94		+1.15	37,434			372	43
Aspen		3.74		1.67		+2.07	158,724			265	328
Total							414,434	2,238	8,807	1,231	2,037

Growth in these types could be expected to be about 200 B.F. per acre per year under management and proper stocking.

Mortality for the past ten years was calculated as twice that of the field estimate for the five-year period 1954-1959. This does not reflect some 60 MM B.F. or more of insect-killed spruce that was salvaged during the period. The subalpine fir has a negative net growth (-5.38 B.F.) due to insects and disease. Most of the sawtimber-size trees of this species are past the pathological rotation.

The growth in the spruce-fir type was calculated from plots taken over both the Grand Mesa and Uncompahgre Forests. The spruce-fir types on the Grand Mesa Forest will average much younger than on the Uncompahgre Forest. The growth figures may, therefore, be a little high on the Uncompahgre Forest.

Calculation of Allowable Cut

Ponderosa Pine Sawtimber Type

There are some 92,066 acres of ponderosa pine sawtimber type within the working circle. Ninety-nine percent of the type is poorly stocked with sawtimber and is infected with dwarfmistletoe. Ninety-three percent of the ponderosa pine type is sawtimber size. The periodic annual net growth in trees 11.00" D.B.H. and larger is 10.54 board feet per acre. Due to the condition of the sawtimber size trees, the type will be cut-over during the next forty years, removing the overaged sawtimber size trees and leaving the poletimber and smaller size trees to grow into sawtimber for later harvesting. The stocking tables for the type show that there are a sufficient number of smaller trees to assure a continuation of the cut after the converting period.

It is estimated that ninety-five percent of the type will be operable during the conversion period.

The allowable cut in area and volume, calculated by a tabulation method, is shown in Table 11 for each 10 years of the converting period. An equal volume of timber to be cut was set up for each decade and the area was adjusted to reflect the volume.

The annual allowable cut for the first 10-year management period is:

Area	2,300 acres
Volume	6,000 M B.F.

This compares with other methods of area calculations as follows:

Straight area based on area of sawtimber divided by the conversion period.

$$\frac{87,500 \text{ acres}}{40 \text{ years}} = 2,188 \text{ acres and } 5,700 \text{ M B.F. per year.}$$

Straight area calculations based on rotation age.

$$\frac{95,000 \text{ acres}}{160 \text{ years}} = 594 \text{ acres and } 1,558 \text{ M B.F. per year}$$

Kemp formula = 1,000 acres and 2,570 M B.F. per year.

All of the above volumes are based on an average cut of 2,622 board feet per acre.

Although the area allowable cut is considerably higher than that indicated by a straight area calculation divided by the rotation and by the Kemp formula, the cut per acre is light. It is very desirable to get once over the type by the year 2000 A.D. in order to put the type in good growing condition.

The following shows the breakdown by species of the volume to be cut from the regulated ponderosa pine type. (See Table 19.)

Species	MM B.F.
Ponderosa Pine	5.50
Douglas-fir	0.30
Aspen	0.10
Subalpine Fir	0.05
Engelmann Spruce	0.03
Blue Spruce	0.02
Total	6.00

Table 11

Allowable Cut -- Area and Volume -- By 10-year Periods for the Next 40 years

10-Year Periods	Type	Area Acres	Volume per Acre* ** Board Ft.	Volume per Acre* Cubic Feet	Total Volume MMBF	Total Volume MMCF
1st	Ponderosa Pine Sawtimber ((P9)	23,000	2,622	739	60	17
	Spruce-Fir Sawtimber (SF9)	24,000	10,832	2,716	260	63
	Aspen (A9 and A8)	30,000	--	1,587	--	48
2nd	Ponderosa Pine (P9)	22,000	2,728	760	60	17
	Spruce-Fir (SF9)	22,000	11,590	2,855	260	63
	Aspen (A9 and A8)	30,000	--	1,587	--	48
3rd	Ponderosa Pine	21,000	2,833	781	60	17
	Spruce-Fir	21,000	12,348	2,995	260	63
	Aspen	30,000	--	1,587	--	48
4th	Ponderosa Pine	20,000	2,938	803	60	17
	Spruce-Fir	20,000	13,106	3,134	260	63
	Aspen	30,000	--	1,587	--	48
	Totals for 40 years-Ponderosa Pine	86,000			240	
	Spruce-Fir	87,000			1,040	
	Aspen	120,000				192

*Volume per acre includes present volume plus net growth at present rate; calculated at mid-point of ten-year period. No growth allowed for Aspen.

**Based on Scribner Dec C Log Rule.

Beginning with the year 2000 A.D. the cut can be calculated on the rotation basis. A desirable distribution of age classes can be obtained by the end of the first rotation.

The Kemp formula indicates that the area allowable cut would be reduced to approximately 1,000 acres per year. Controlled stocking put into effect during the next 40 years should greatly increase the volume per acre. Under these conditions there should be very little, if any, decrease in volume allowable cut.

Spruce-Fir Sawtimber Type

There is a total of 162,230 acres of spruce-fir and Douglas-fir type in the working circle. Eighty-eight percent is spruce-fir. Due to the small acreage of Douglas-fir, the two types are combined into a working group. All timber cut within a Douglas-fir type will be posted against the spruce-fir allowable cut.

Seventy-two percent of the type is largely overaged sawtimber size. Since 1953, the type has been heavily infested with Engelmann spruce bark beetles. Epidemic insect infestations can be expected to give periodic trouble as long as there is a predominance of overaged timber. For this reason, this sawtimber type will be harvested during the next 40 years. If there is an appreciable increase in mortality, a shorter adjustment period may be warranted.

The annual net growth of 75.80 board feet per acre is an average for the entire forest. It is estimated to be somewhat less for this working circle. However, it is used to calculate the cut.

The allowable cut based on a tabulation method of calculation is shown in Table 11, using the same method as for ponderosa pine.

The annual allowable cut for the first 10-year planning period is:

Area	2,400 acres
Volume	26 MM B.F.

The volume is broken down by species as follows. (Table 21)

Species	Volume MM B.F.
Engelmann Spruce	18.70
Subalpine Fir	04.20
Aspen	01.60
Douglas-fir	01.30
Blue Spruce	00.20
Total	26.00

This may be compared with other area calculations as follows:

a. Straight area calculation based on rotation.

$$\frac{122{,}000 \text{ acres}}{140 \text{ years}} = 871 \text{ acres per year.}$$

871 acres x 10,832 board feet = 9,400 M B.F. per year.

b. Straight area of sawtimber type based on 40-year adjustment period.

$$\frac{88{,}000 \text{ acres}}{40 \text{ years}} = 2{,}200 \text{ acres per year.}$$

2,200 acres x 10,832 board feet = 23,800 M B.F. per year.

c. Kemp formula =
1,386 acres per year
1,132 acres x 10,832 board feet = 15,000 M B.F. per year.

The increase in the tabulation method over the others is due to 72 percent of the type being in overaged sawtimber size class.

Beginning in the year 2000 A.D. it appears that the allowable cut would be reduced about one-third, based on the Kemp formula. At that time, the allowable cut may be based on the rotation. A balanced distribution of age classes would then be obtained at the end of the first rotation period.

Aspen

During the past few years there has been a small demand for aspen for veneer, boards and excelsior. Since it is expected that the demands for this species will increase, the cutting will be regulated.

There are 7,965 acres of sawtimber size stands and 150,759 acres of poletimber size stands in the working circle. Due to the difficulty of typing and the overlapping of these two stand size classes, they are combined and regulated as a group.

Most of the stands are at a pathological rotation and are slowly converting back to coniferous types.

An allowable cut is calculated merely as a guide to indicate the area and volumes that could be expected over the next 40 years. After the year 2000 A.D., the species will be available from only the better sites. No attempt is made to determine just what volume will be available for harvesting at that time.

The annual allowable cut from Table 11

Area - 3,000 acres
Volume - 4.8 MM C.F.

The volume breakdown by species is:

Species	Volume MM C.F.
Aspen	3.67
Engelmann Spruce	.69
Douglas-fir	.27
Blue Spruce	.08
Subalpine Fir	.06
Ponderosa Pine	.03
Total	4.80

Cutting Budget

The cutting budget for the first 10-year period is shown in Table 12. The selection of the compartments to be cut is based on age, condition classes and accessibility.

Each year, a three-year action program and an annual sales program will be selected from the 10-year budget in accordance with form R-2 2400-17a.

The cutting budget for aspen, although shown in Table 12, will not be firmed up until a demand for the product has been developed.

Table 12

Cutting Budget

Uncompahgre Working Circle

Program Offerings in Period 1962-1971

Compartment		Ponderosa Pine		Douglas-fir Spruce-Fir		Aspen	
			Net Volume		Net Volume		Volume
No.	Name	Acres	MBF	Acres	MBF	Acres	MM Cu. Ft.
5	Cimarron			800	8,320		
8	Dallas			3,000	31,200	600	1.1
33	Sanborn Park	2,000	5,200				
35	Spring Creek	1,000	2,600				
29	Naturita	800	2,080				
7	Cone			300	3,120	10,000	18.0
3	Big Blue			6,000	62,400	500	1.0
32	Roubideau	2,000	5,200	3,000	31,200	1,000	1.8
26	Love Mesa			100	1,040	500	1.0
14	Ophir			1,200	12,480	5,000	9.0
1	Alpine Plateau			300	3,120		
9	Lake Fork			1,000	10,400		
36	Spruce Mt.	2,300	6,000	500	5,200		
19	Craig Point	5,000	13,000				
34	Silesca	3,000	7,800	1,000	10,400	500	1.0
24	Iron Spgs.	1,000	2,600				
6	Cow Creek			2,000	20,800	1,000	1.8
37	Unaweep	2,000	5,400	200	2,080	500	1.0
31	Pine Mt.	500	1,300				
30	Paradox	500	1,300	2,000	20,800	500	1.0
10	Little Cimarron			3,000	31,200		
26	Love Mesa	5,000	13,000	300	3,120	500	1.0
29	Naturita	1,000	2,600				
8	Dallas			1,000	10,400		
18	Cottonwood	2,000	5,400				
5	Little Cimarron			1,000	10,400		
12	North Henson			1,000	10,400		
Total		28,100	73,480	27,700	288,080	20,600	37.7

TRANSPORTATION

Road Program

The road construction and survey program is scheduled in Table 13. This program is coordinated with the cutting budget, and is necessary for the removal of the timber.

Thirty-six miles of roads, costing an estimated $415,000, are slated to be built by the Forest Service in the 10-year period. The timber sale purchasers will build 101.1 miles of roads estimated to cost $691,671. All of these roads will be forest system, all-purpose roads of Class SN-14 or 16.

Right-of-Way Needs

Rights-of-way will be obtained to prevent delay in road construction.

Roads Needing Right-of-Way Action

Road No.	Name	F.Y. Action Needed
545	Dallas	1961
576	Little Cimarron	1962
581	Cow Creek	1965
22074	Ophir	1965

A three-year action program, Form R2-2400-17b, will be revised each year to show firmed up action needed for rights-of-way and road construction. The annual right-of-way report handled by the Division of Recreation and Lands will also include rights-of-way needed for the removal of the timber listed in the cutting budget.

Table 13

10-Year Road Program

Comp. No.	Name	Road Name	Road No.	Class	Constructed By	Right-of-Way Year Required	Miles	Average Cost/Mi	Estimated Total Cost	Survey Required	Remarks
1	Alpine Plateau	Alpine Ranger Sta	552	SN-16	Operator		6	1,120	6,720	Done	Betterment
1	Alpine Plateau	Alpine Plateau	559	"	"		4	6,338	25,350	"	New Construction
7	Cone	Main Beaver	531	"	"		10	1,300	13,000	"	Betterment
22	Glencoe	Bucktail	575	"	"		10	5,000	50,000	"	New Construction
23	Hanks Valley	Hanks Valley	522	"	"		4	6,213	24,850	"	Partially Const.
5	Cimarron	Cimarron	549	"	"		4.5	5,707	25,680	"	" "
7	Cone	Cone	532	"	"		5.6	4,600	26,000	"	New Construction
29	Naturita	Sawmill Springs	526	"	"		6.7	7,460	50,000	"	New Construction
6	Cow Creek	Flume Creek	579	"	"		3.5	6,595	23,085	"	New Construction
11	Lou Creek	Devil	555	"	"		1.8	8,325	14,986	"	New Construction
25	Kelso	Love Mesa	508	"	"	1967	2	6,500	13,000	1961	New Construction
8	Dallas	Dallas	545	"	"	1962	12	9,000	108,000	1962	New Construction
11	Lou Creek	Courthouse	556	"	"		4	9,000	36,000	1962	New Construction
5	Cimarron	Cimarron	549	"	"		3	7,000	21,000	1962	New Construction
34	Silesca	Transfer	520	"	"	1963	7	7,000	49,000	1962	New Construction
10	Little Cimarron	Little Cimarron	576	"	Forest Service	1964	15	10,000	150,000	1962	New Construction
1	Alpine Plateau	Alpine Plateau	559	"	Operator		2	6,000	12,000	1964	New Construction
32	Roubideau	Davis Point	23016	"	Forest Service		3	10,000	30,000	1965	New Construction
6	Cow Creek	Cow Creek	581	"	"	1967	5	17,000	85,000	1965	New Construction
9	Lake Fork	Elk Creek	583	"	Operator		4	9,000	36,000	1966	New Construction
14	Ophir	Trestle	22074	"	"	1965	5	8,000	40,000	1966	New Construction
19	Craigs Point	McKenzie	524	"	"		5	7,000	35,000	1966	New Construction
3	Big Blue	Alpine Rgr.Sta.	552	"	Forest Service		5	14,000	70,000	1967	New Construction
18	Cottonwood	Box Springs	518	"	Operator		2	9,000	18,000	1967	New Construction
29	Naturita	Sawmill Springs	526	"	"	1967	4	8,000	32,000	1968	New Construction
33	Sanborn Park	Dead Horse	580	"	"		4	8,000	32,000	1969	New Construction
36	Spruce Mountain	47 Road	584	"	Forest Service	1965	8	10,000	80,000	1969	New Construction
							1,461		1,106,671		

SALES POLICY

An additional mill using some 10 MM B.F. of timber a year is needed to reach the allowable cut objectives. The sale offerings will vary to accommodate the different sized mills. The sales volumes will vary from 1 MM B.F. to 50 MM B.F.

Points of Manufacture

Grand Junction, Delta, Montrose, Ridgway, Norwood and Naturita are logical points for lumber manufacturing. Norwood and Naturita are not rail centers but are near proposed sale areas. Offerings will be appraised to the nearest logical location.

Merchantability Specifications

All Species

Minimum Stump Height	- 12"
Minimum Sawtimber Tree	- 10" D.B.H. and 8" top D.I.B.
Minimum Merchantable Log	- 8' long
	8" D.I.B. small end
	33-1/3% net scale
	20 B.F. minimum net scale

Logging Methods

Ponderosa Pine Type

The use of tractors, jammers and animals for skidding is acceptable. The maximum size tractor is D-7 without written authorization. The presale prescription will specify acceptable skidding equipment for the sale.

Spruce-Fir Type

The same class of equipment is acceptable in this type as in the pine. This type will have complete spruce slash and cull disposal because of the potential bark beetle epidemics. Tree length skidding with piling and burning of cull and slash will be the most common method of disposal. Presale prescriptions will be specific for each sale.

TIMBER STAND IMPROVEMENT

Planting

The planting job for the 10-year period is in Table 14. Planting funds other than K-V will be needed to accomplish the planting job. Site preparation and mechanically planting the chaparral and understocked pine types will be a major project. The spruce-fir understocked types will be planted by hand with about 300 Engelmann spruce or lodgepole pine per acre. The species planted will depend upon the site, and natural regeneration is expected to fill in to obtain about 600 trees per acre.

Measures to Aid Regeneration

Seedbed scarification in the spruce-fir type sale will be encouraged by tractor tree length skidding and slash burning.

Thinning

Sale area betterment funds will be collected from all ponderosa pine sales to accomplish the thinning needed on the sale area. Commercial thinning will be accomplished to the extent of the market for small round wood.

Table 14

THE PLANTING JOB - F. Y. 1962-1981

Type	Non-stocked Acres	Poorly Stocked Sawtimber Stands Acres**	Cutover Stands Acres	Total Acres
Ponderosa Pine	1,800	45,000	13,600	60,400
Chaparral	*87,000			87,000
Spruce-fir	2,600	30,000	20,000	52,600
Sub-Total	91,400	75,000	33,000	200,000

F. Y. 1962-1971

Ponderosa Pine	1,800	15,000	5,000	21,800
Chaparral	30,000			30,000
Spruce-fir	1,000		5,000	6,000
Sub-Total	32,800	15,000	10,000	57,800

* About 50% of the chaparral type (mostly oak brush) is estimated to be planted with site preparation and planting machines. The other 50% of this type is estimated to be too steep or rocky, or used in range revegetation projects.

**About 50% of the poorly stocked sawtimber is slated to be planted.

PROTECTION

Insects

Spruce Bark Beetle Program

The Engelmann spruce bark beetle (Dendroctonus engelmanni) is the most dangerous insect on the working circle. All Forest Service personnel will help in infestation detection. All spruce-fir type sales will provide for spruce slash and cull to be piled and burned. A trap tree program will also be included in sale contracts where needed. Other control measures will be practiced when and where necessary.

Disease

Dwarfmistletoe Program

Some of the ponderosa pine stands are infected with dwarfmistletoe (Arceuthobium vaginatum). The control measure will be cutting infected trees through both sale programs and thinning projects.

Animal

Porcupine Control Program

There is considerable porcupine damage in some stands of ponderosa pine. All Forest Service employees and many forest users will be instructed to kill porcupines when encountered in course of regular work or travel. The Forest Service employees will be furnished 22-caliber ammunition for killing porcupines. The public should be informed of the damage done by porcupines.

Fire

The district fire plans on the working circle will be followed for fire prevention and control. The past fire record does not warrant any special slash disposal program. All future spruce sales will have spruce slash piled and burned which will require special fire control measures.

Livestock

Plantations will be fenced where necessary for protection from livestock.

Wildlife

Plantations will not be established in over-populated winter game ranges.

SUPPORTING DATA

Compartment Records

A system of compartment records will be set up for each ranger district by July 1, 1962. The concerned district rangers will currently record area and volume cut by types, acres planted by species, area and type of timber stand improvement work done, and changes in ownership for each compartment.

Timber Inventory

The inventory data on which this plan is based was obtained from the Cooperative Forest Survey - Region 2 Inventory Program conducted in 1957.

The inventory was conducted by standards prescribed and agreed upon by the Forest Survey of the Rocky Mountain Forest and Range Experiment Station and the Division of Timber Management of Region 2.

Forest Survey read the plots and processed the data. Region 2 is printing the final type maps. They delineated the types on the aerial photos, transferred the types to planimetric maps, and calculated the area of the types.

Sampling Error

Table 15 shows the number of location taken for each volume stratum. There were two plots taken at each location. The table shows that because of the acreage, more plots probably should have been taken in the following types:

Type	SSC	SC
Ponderosa Pine	SST	Poor
Spruce-Fir	SST	Poor
Ponderosa Pine	PT	Poor - no plots
Spruce-Fir	PT	Well and medium
Aspen	PT	Nonclassified

With 156 locations, the sampling error in volume is estimated not to exceed 5% for the entire forest.

Forty-four of the 156 locations were taken on the Grand Mesa Working Circle and applied to the Uncompahgre Working Circle which will cause some discrepancy.

There is no sampling error in area because the acreages were based upon 100% mapping job.

Data Processing

Forest Survey of the Intermountain Forest and Range Experiment Station processed the data through the IBM section of the Pacific Southwest Station. This was done in accordance with the "Plan for Compilation of the Intermountain Forest Survey, Rocky Mountain Area by IBM Method" October 1, 1956 by Robert M. Miller.

Copies of the plot tally sheets and the following tables are on file in the forest supervisor's office:

Area

NFA 2 - Compartment Area
NFA 3 - Block Area
NFA 4 - Working Circle Area

Volume

NFA 6 - Net volume per acre by 10" D.B.H. class.
NFA 7 - Net volume per acre by 2" D.B.H. class.
NFA 24 - Average past volume per acre by volume stratum.
Miscellaneous tables - Number of trees per acre and other Forest Survey Summaries.

Aerial photographs on which the photo interpretation was done are on file at the Denver Federal Record Storage Center. Photographic plates from which the type maps were printed are stored in the Division of Timber Management, Forest Service, Denver, Colorado.

Growth and Mortality Calculations

NFA Table No. 31 in the IBM binder gives the average adjusted 10-year growth increment and the 10-year mortality by growth stratums, species, and 2" D.B.H. classes. The volumes are shown in both board feet and cubic feet.

The growth stratum codes are as follows:

GS-01 = All conifer sawtimber stands.
GS-02 = All conifer poletimber stands.
GS-03 = All conifer seedling and sapling and nonstocked stands.
GS-04 = All hardwood stands.

The gross 10-year growth is based upon merchantability class (MC-1) trees. These are all live, merchantable trees. Mortality is shown under merchantability class (MC-7) trees. These are all mortality trees. The Forest Survey crews estimated the trees that died during the past five years. This volume was then doubled to put it on the same period as the growth. The growth was based on the past 10 years.

The periodic annual net growth per acre can be determined for any given species and D.B.H. class within a growth stratum, or the total of all species in D.B.H. classes within a growth stratum, by subtracting the volume shown for the average 10-year mortality (MC-7) from the average 10-year growth increment (MC-1) and dividing by 10.

Growth stratums do not correspond to volume stratums. The total volume of timber in the working circle and the allowable cuts are based upon volume stratums. It was, therefore, necessary to construct a growth and mortality table for the volume stratums using the data given in NFA Table 31. This was done by weighting the growth and mortality of the species in the growth stratums by the percent of each species in the volume stratums.

Table 32 shows the annual gross growth, mortality and annual net growth for the species within the growth stratum. Table 10 shows this data reflected into the annual net growth and annual mortality by species for the major types.

Table 15

Area, Volume per Acre and Total Volume by Volume Stratums

Volume Stratums				No. of	Total Area	Volume per Acre		Expanded Volume	
No.	Type	SSC	SC	Location	Acres	B.F.	C.F.	M B.F.	M C.F.
-	Douglas-fir	LST	Poor		185	Use V.S.2:		2,516	680
1		SST	Med.	2	1,560	13601.16	3675.82	21,218	5,734
2		SST	Poor	6	12,209	4889.08	1683.34	59,691	20,552
3	Ponderosa Pine	LST	Med.	1	210	11250.60	2505.52	2,363	526
4			Poor	3	5,791	4759.47	1013.03	27,562	5,866
5		SST	Med.	2	320	4826.13	1261.13	1,544	404
6			Poor	18	85,745	2391.65	702.83	205,072	60,264
-	White Fir	SST	M & P		215	Use V.S.5:		1,038	271
-	Spruce-Fir	LST	Poor		30	Use V.S.9:		224	58
7		SST	Well	4	50	22368.43	5437.97	1,118	272
8			Med.	64	36,583	15800.82	3920.79	578,041	143,434
9			Poor	28	66,058	7483.09	1938.21	494,318	128,034
	Sub-Total Sawtimber			128	208,956	6674.63	1752.01	1,394,705	366,095
10	Douglas-fir	PT	All	3	3,776	-	1232.98		4,655
11	Ponderosa Pine	PT	All	1	5,759	-	64.52		372
12	Spruce-Fir	PT	All	3	37,434	-	1751.49		65,565
	Sub-Total Poletimber				46,969		1502.95		70,592
	Douglas-fir	S-S	Well		70				
	Ponderosa Pine	S-S	All		354				
14	Spruce-Fir	S-S	All	1	1,565				
	Sub-Total Seedling-Sapling				1,989				
13	Ponderosa Pine	NS	-	1	1,880				
	Spruce-Fir	NS	-		2,710				
	Sub-Total Nonstocked				4,590				
	Total Conifers				262,504				
15	Aspen	ST		9	7,965	-	2999.95		23,895
17	Aspen	PT		10	150,759		1741.46		262,541
	Aspen	S-S & NS			22,217		-		-
	Total Hardwoods				180,941		1804.61		286,436
	Grand Total			156	443,445	--	--	1,394,705	723,123

Table 16

Adjusted Periodic Annual Growth and Mortality Volume Per Acre by Species
Based on Past 10 Years

	SPECIES													
	Douglas-fir		Ponderosa Pine		White Fir		Subalpine Fir		Engelmann Spruce		Blue Spruce		Aspen	
Sawtimber (GS-1)	BF	CF	BF	CF	BF	CF	BF	CF	BF	CF	BF	CF	CF	
Gross Growth	4.63	1.16	11.20	2.28	00.28	0.05	29.70	9.68	111.72	23.28	158.11	36.60	4.16	
Mortality	00.72	0.17	00.84	0.19	0.00	0.00	35.08	12.18	17.47	3.95	54.32	16.54	2.26	
Net Growth	+3.91	+0.99	+10.36	+2.09	+00.28	+00.05	-5.38	-2.50	+94.25	+19.33	+103.79	+20.06	+1.90	
Poletimber (GS-2)														
Gross Growth		6.85		.46				9.79		13.29			1.46	
Mortality		0.00		.00				25.04		00.00			1.83	
Net Growth		+6.85		+.46				-15.25		+13.29			-.37	

Table 17

Average Net Volume Per Acre By Species and Crown Density Classes

DOUGLAS-FIR SAWTIMBER TYPE

Large and Small Sawtimber

Species	Crown Density Classes: Medium (VS1) BF	Medium (VS1) CF	Poor (VS2) BF	Poor (VS2) CF	Wt. Average BF	Wt. Average CF	Percent of Species Based on BF	Percent of Species Based on CF	Wt.Annual Growth & Mortality: Net Growth BF	Mor-tality BF	Net Growth CF	Mor-tality CF
Douglas-fir	10,668.71	2,561.14	2,031.98	783.22	3,111.57	1,005.46	52.05	52.03	+2.03	.37	+.51	.09
White Fir			240.32	53.02	210.28	46.39	3.52	2.40	+.01	.00	+.00	.00
Subalpine Fir	935.63	383.59	1,624.45	436.38	1,538.35	429.78	25.73	22.24	-1.39	9.05	-.56	2.71
Engelmann Spruce	1,155.00	231.49	33.33	41.43	173.54	65.19	2.90	3.37	+2.72	.50	+.65	.13
Blue Spruce			20.54	5.04	17.97	4.41	.30	.23	.31	.16	+.05	.04
Aspen	841.82	499.60	938.46	364.25	926.38	381.17	15.50	19.73			+.38	.45
Total	13,601.16	3,675.82	4,889.08	1,683.34	5,978.09	1,932.40	100.00	100.00	+3.68	10.08	+1.03	3.42

Area in Volume Stratum			
Acres	1,745	12,209	13,954
Percent	12.50	87.50	100

Table 18

Stock and Stand Table By D.B.H. and Crown Density Classes

DOUGLAS-FIR SAWTIMBER TYPE

D.B.H. 2" Classes	Stand Size and Crown Density Class: Large and Small Sawtimber Medium and Poor (VS1) — No. of Trees	Net Volume BF	Net Volume CF	Small Sawtimber Poor (VS2) — No. of Trees	Net Volume BF	Net Volume CF	Weighted Average — No. of Trees	Net Volume BF	Net Volume CF
1.0-2.9									
3.0-4.9									
5.0-6.9	62.75		247.53	66.66		183.98	66.17		191.92
7.0-8.9	62.50		347.84	54.14		283.29	55.18		291.36
9.0-10.9	87.50	2,608.88	839.29	33.34	1,185.39	355.56	40.11	1,363.32	416.03
11.0-12.9	18.75	1,299.01	315.21	21.67	1,234.56	318.90	21.30	1,242.62	318.44
13.0-14.9	12.50	1,426.23	318.07	7.50	692.54	157.68	8.04	784.25	177.73
15.0-16.9	5.00	947.28	196.43	3.33	392.10	89.91	3.54	461.50	103.22
17.0-18.9	5.00	864.50	180.66	4.17	705.22	157.87	4.27	725.13	160.72
19.0-20.9	3.75	1,090.13	215.58	1.67	351.12	72.34	1.93	443.50	90.24
21.0-22.9	3.75	1,600.88	312.20	--	--	--	0.47	200.11	39.02
23.0-24.9	1.25	630.00	119.46	.42	147.76	29.10	0.52	208.04	40.40
25.0-26.9									
27.0-28.9	3.75	2,236.50	417.89	.42	180.39	34.71	0.84	437.40	82.61
29.0-30.9	1.25	897.75	165.66	--	--	--	0.16	112.22	20.71
Total	267.75	13,601.16	3,675.82	193.32	4,889.08	1,683.34	202.53	5,978.09	1,932.40

Area in Volume Stratum			
Acres	1,745	12,209	13,954
Percent	12.50	87.50	100

Table 19

Average Net Volume Per Acre By Species and Crown Density Classes

PONDEROSA PINE SAWTIMBER TYPE

Species	Crown Density Classes: Large Sawtimber: Medium (VS3) BF	Large Sawtimber: Medium (VS3) CF	Large Sawtimber: Poor (VS4) BF	Large Sawtimber: Poor (VS4) CF	Small Sawtimber: Medium (VS5) BF	Small Sawtimber: Medium (VS5) CF	Small Sawtimber: Poor (VS6) BF	Small Sawtimber: Poor (VS6) CF	Weighted Average BF	Weighted Average CF	Percent of Species Based on BF	Percent of Species Based on CF	Weighted Annual: Net Growth BF	Weighted Annual: Mortality BF	Weighted Annual: Net Growth CF	Weighted Annual: Mortality CF
Ponderosa Pine	11,250.60	2,505.52	3,974.22	824.21	4,826.13	1,112.63	2,213.18	611.58	2,353.89	631.07	91.61	86.63	9.49	.77	1.81	.16
Douglas-fir			785.25	167.82		148.50	70.50	21.61	115.05	31.20	4.48	4.28	.17	.03	.04	.01
Aspen				21.00			61.54	55.71	57.31	53.20	2.23	7.30			.14	.16
Subalpine Fir							20.73	5.67	19.30	5.28	.75	.73	-.04	.26	-.02	.09
Engelmann Spruce							14.34	3.12	13.35	2.91	.52	.40	.49	.09	.08	.02
Blue Spruce							11.36	2.56	10.58	2.38	.41	.33	.43	.22	.07	.05
Pinyon Pine								2.58		2.40		.33				
Total	11,250.60	2,505.52	4,759.47	1,013.03	4,826.13	1,261.13	2,391.65	702.83	2,569.48	728.44	100	100	10.54	1.37	2.12	.49

Area in Volume Stratum					
Acres	210	5,791	320	85,745	92,066
Percent	.23	6.29	.35	93.13	100

Table 20

Stock and Stand Table By D.B.H. and Crown Density Classes

PONDEROSA PINE SAWTIMBER TYPE

Average Per Acre

D.B.H. 2" Classes	Large Sawtimber						Small Sawtimber						Weighted Average		
	Crown Density						Crown Density								
	Medium (VS3)			Poor (VS4)			Medium (VS5)			Poor (VS6)					
	No.of Trees	Net Volume BF	CF	No.of Trees	Net Volume BF	CF	No.of Trees	Net Volume BF	CF	No.of Trees	Net Volume BF	CF	No.of Trees	Net Volume BF	CF
1.0-2.9															
3.0-4.9															
5.0-6.9				16.67		21.00	25.00		31.50	27.78		35.34	27.01		34.34
7.0-8.9							37.50		117.00	8.33		32.87	7.89		31.02
9.0-10.9										12.50	79.65	72.50	11.64	74.18	67.52
11.0-12.9							.25	49.45	16.92	4.03	99.57	42.31	3.76	92.90	39.46
13.0-14.9				2.50	216.32	52.52	2.50	193.20	50.52	3.89	196.69	59.92	3.78	197.46	59.29
15.0-16.9	2.50	416.30	89.76	1.66	157.38	37.71	5.00	579.60	135.00	3.06	293.00	71.52	2.98	285.76	69.66
17.0-18.9							7.50	1,376.55	292.32	1.39	195.26	43.56	1.32	186.66	41.59
19.0-20.9	12.50	3,233.80	652.08	4.17	1,010.91	204.35	3.75	900.45	183.60	2.22	474.39	98.17	2.37	515.98	106.42
21.0-22.9	10.00	2,164.50	608.95	1.66	412.48	97.14	2.50	504.00	146.66	.83	126.39	42.95	0.91	150.39	48.02
23.0-24.9	2.50	816.75	191.90	1.67	533.23	126.43	3.75	1,222.88	287.61	1.25	338.53	85.90	1.29	354.97	89.40
25.0-26.9	10.00	4,619.25	962.83	1.67	920.96	182.24				.42	157.14	35.01	0.52	214.90	46.28
27.0-28.9				1.67	803.97	165.38				.28	133.01	27.42	0.37	174.44	35.94
29.0-30.9				.83	704.22	126.26				.28	172.51	33.14	0.31	204.95	38.81
31.0-34.9										.28	125.51	22.22	0.26	116.89	20.69
Total	37.50	11,250.60	2,505.52	32.50	4,759.47	1,013.03	88.75	4,826.13	1,261.13	66.54	2,391.65	702.83	64.41	2,569.48	728.44

Area in Volume Stratum				
Acres	210	5,791	320	85,745	92,066
Percent	.23	6.29	.35	93.13	100

Table 21

Average Net Volume Per Acre By Species and Crown Density Classes

SPRUCE-FIR SAWTIMBER TYPE

Species	Crown Density Classes: Small Sawtimber: Well (VS7) BF	Well (VS7) CF	Medium (VS8) BF	Medium (VS8) CF	Poor (VS9) BF	Poor (VS9) CF	Weighted Average BF	Weighted Average CF	Percent of Species Based on BF	Percent of Species Based on CF	Wt. Annual Growth & Mortality: Net Growth BF	Mortality BF	Net Growth CF	Mortality CF
Douglas fir			78.42	18.41			27.93	6.56	.27	.25	+.01	.00	.00	.00
Subalpine Fir	4,124.56	1,304.84	2,459.53	832.06	917.07	371.96	1,468.10	536.31	14.04	20.27	-.76	4.92	-.35	1.71
Engelmann Spruce	16,882.17	3,751.90	12,493.39	2,854.94	6,226.94	1,425.34	8,464.38	1,935.73	80.98	73.15	+76.32	14.15	+14.14	2.95
Blue Spruce			65.93	16.52			23.48	5.88	.22	.22	+.23	.12	+.04	.04
Aspen	1,361.70	381.23	703.55	198.86	339.08	140.91	469.42	161.67	4.49	6.11			+.12	.14
Total	22,368.43	5,437.97	15,800.82	3,920.79	7,483.09	1,938.21	10,453.31	2,646.15	100	100	+75.80	19.19	+13.95	4.84

Area in Volume Stratum				
Acres	50	36,583	66,058	102,691
Percent	.05	35.62	64.33	100

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Table 22

Stock and Stand Table By D.B.H. and Crown Density Classes

SPRUCE-FIR SAWTIMBER TYPE

Average Per Acre

D.B.H. 2" Classes	Small Sawtimber: Crown Density: Well (VS7) No. of Trees	Well (VS7) Net Volume BF	Well (VS7) Net Volume CF	Medium (VS8) No. of Trees	Medium (VS8) Net Volume BF	Medium (VS8) Net Volume CF	Poor (VS9) No. of Trees	Poor (VS9) Net Volume BF	Poor (VS9) Net Volume CF	Weighted Average No. of Trees	Weighted Average Net Volume BF	Weighted Average Net Volume CF
1.0-2.9												
3.0-4.9												
5.0-6.9	68.75		284.84	47.26		174.68	41.97		136.93	43.87		150.45
7.0-8.9	62.50		426.65	53.12		365.64	25.89		175.62	35.61		243.43
9.0-10.9	37.50	2,059.69	500.48	40.62	2,029.93	500.31	31.25	1,443.82	361.61	34.59	1,652.90	411.08
11.0-12.9	41.26	3,430.17	802.33	27.64	2,302.67	527.99	16.61	1,276.73	294.77	20.55	1,643.25	378.10
13.0-14.9	33.75	4,776.85	1,024.96	20.72	2,685.12	581.27	7.59	875.82	192.41	12.28	1,522.24	331.34
15.0-16.9	16.88	3,234.80	676.13	13.61	2,520.16	529.38	5.36	892.62	188.31	8.30	1,473.52	310.04
17.0-18.9	10.63	2,804.12	577.23	7.08	1,794.07	368.32	4.38	1,062.33	216.84	5.34	1,323.85	270.98
19.0-20.9	6.26	2,165.69	435.64	5.21	1,763.59	356.65	2.14	687.76	137.77	3.24	1,071.71	215.88
21.0-22.9	1.88	905.63	177.18	2.74	1,189.11	237.08	.45	206.47	40.72	1.27	556.84	110.73
23.0-24.9	.63	352.13	67.03	.86	486.43	92.66	1.16	655.78	124.71	1.05	595.31	113.26
25.0-26.9	1.25	775.13	145.24	.71	475.57	88.08	.18	145.79	26.32	0.37	263.58	48.38
27.0-28.9	.63	605.82	107.29	.23	188.48	34.07	.18	159.78	28.52	0.20	170.23	30.54
29.0-30.9				.16	151.91	26.89	.09	76.19	13.68	0.11	103.12	18.38
31.0-32.9				.16	159.48	28.36				0.06	56.81	10.10
35.0-36.9				.04	54.30	9.41				0.01	19.34	3.35
39.0-40.9	.63	1,258.40	212.97								.63	.11
Total	282.55	22,368.43	5,437.97	220.16	15,800.82	3,920.79	137.25	7,483.09	1,938.21	166.85	10,453.32	2,646.15

Area in Volume Stratum				
Acres	50	36,583	66,058	102,691
Percent	.05	35.62	64.33	100

Table 23

Average Net Volume Per Acre By Species and Crown Density Classes

DOUGLAS-FIR POLETIMBER TYPE

Species	Poletimber Well and Medium (VS10) CF	Percent of Species Based on CF	Weighted Annual Growth and Mortality -- Cubic Feet: Net Growth	Mortality
Douglas-fir	1124.19	91.18	6.25	0.00
Ponderosa Pine	12.16	.99	0.00	0.00
Subalpine Fir	51.63	4.18	-.64	1.05
Aspen	45.00	3.65	-.01	.07
Total	1232.98	100.00	5.60	1.12

Area in Volume Stratum
Acres 3,776

Table 24

Stock and Stand Table by D.B.H. and Crown Density Classes

DOUGLAS-FIR POLETIMBER TYPE

Average Per Acre

D.B.H. 2" Classes	Poletimber Well and Medium (VS10) No. of Trees	Net Volume CF
6	75.00	226.05
8	83.33	404.70
10	16.67	142.73
12	8.33	91.97
14	2.50	55.07
16	2.50	72.59
18	1.67	58.20
20	1.67	68.63
22	0.83	48.53
24	0.83	64.51
Total	193.33	1,232.98

Table 25

Average Net Volume Per Acre By Species and Crown Density Classes

SPRUCE-FIR POLETIMBER TYPE

Species	Poletimber Well and Medium (VS12) CF	Percent of Species Based on CF	Weighted Annual Growth and Mortality -- Cubic Feet: Net Growth	Mortality
Douglas-fir	14.47	.83	.06	0.00
Subalpine Fir	687.02	39.22	-5.98	9.82
Engelmann Spruce	934.30	53.34	7.09	0.00
Aspen	115.70	6.61	-.02	.12
Total	1,751.49	100.00	+1.15	9.94

Area in Volume Stratum
Acres 31,953

Table 26

Average Net Volume Per Acre By Species

ASPEN TYPE

Species	Sawtimber (VS15) Net Volume BF	Sawtimber (VS15) Net Volume CF	Sawtimber Percent of Species Based on BF	Sawtimber Percent of Species Based on CF	Poletimber (VS17) Net Volume CF	Poletimber Percent of Species Based on CF	Wt. Annual Growth & Mortality Net Growth CF	Wt. Annual Growth & Mortality Mortality CF
Douglas-fir	20.85	5.09	.19	.17	101.42	5.82	+.38	.00
Ponderosa Pine					12.86	.74	.00	.00
Subalpine fir	765.27	375.33	6.89	12.51	10.18	.59	-.10	.22
Engelmann Spruce	1,959.93	431.69	17.65	14.39	251.31	14.43	+1.96	.03
Blue Spruce	485.80	109.53	4.38	3.65	28.11	1.61	+.03	.01
Aspen	7,869.47	2,078.31	70.89	69.28	1,337.58	76.81	-.20	1.41
Total	11,101.32	2,999.95	100.00	100.00	1,741.46	100.00	+2.07	1.67

Area in Volume Stratums

Acres	7,965	105,759	158,724
Percent	5.02	94.98	100

Table 27

Stock and Stand Table By D.B.H. and Crown Density Classes

ASPEN TYPE

Average Per Acre

D.B.H. 2" Classes	Small Sawtimber Type Medium (VS15) No. of Trees	Net Volume BF	Net Volume CF	Poletimber Type Well (VS17) No. of Trees	Net Volume CF
6	44.45		137.98	177.79	499.61
8	63.89		462.83	61.12	364.60
10	33.33	1,844.19	442.90	16.67	200.58
12	43.89	3,683.82	811.58	8.89	143.17
14	19.17	2,218.20	473.29	7.23	176.23
16	6.66	1,128.39	231.80	2.77	96.73
18	3.62	876.61	176.17	2.50	116.61
20	1.67	573.39	112.80	1.40	73.12
22	1.12	400.43	81.01	0.28	18.58
24	0.28	171.77	32.20	0.28	28.11
26				0.28	24.12
28	0.28	204.52	37.39		
Total	218.36	11,101.32	2,999.95	279.12	1,741.46
Area in Volume Stratum					
Acres		7,965		150,759	
Percent		5.02		94.98	

Table 28

Area of Commercial National Forest Lands By Compartments, Timber Types, Stand Size, and Stocking Class

Alpine Block Compartment No.	Name	Major Types	Large Sawtimber Med	Large Sawtimber Poor	Small Sawtimber Well	Small Sawtimber Med.	Small Sawtimber Poor	Poletimber Well	Poletimber Med.	Poletimber Poor	Seedling-Sapling Well	Seedling-Sapling Med	Seedling-Sapling Poor	Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
1	Alpine Plateau	S-F				1,630	920	240	760	230	15	25	30		3,850	2,550	26,656
		Aspen													1,110		
2	Baldy	D-F				240	423	10	5						678	663	3,963
		PP		30			30			10					70	60	154
		S-F				830	910	340	495						2,575	1,740	18,189
		Aspen													1,762		
3	Big Blue	S-F				2,190	5,260	950	4,300	995	60	385	320		14,460	7,450	77,877
		Aspen													1,520		
4	Canyon Creek	D-F				210	30		65						305	240	1,435
		S-F				145	720	20	5						890	865	9,042
		Aspen													695		
5	Cimarron	D-F					280								280	280	1,674
		S-F				3,720	4,910	1,020	2,050	120	20		80		11,920	8,630	90,212
		Aspen													6,080		
6	Cow Creek	D-F				255	1,010	140	110						1,515	1,265	7,562
		PP					120								120	120	308
		S-F				1,910	2,250	1,395	875	190		15		80	6,715	4,160	43,486
		Aspen													3,030		
7	Cone	D-F				40	50			70					160	90	538
		S-F				1,800	8,080	1,310	2,690	2,690	30			2,070	18,070	9,880	103,279
		D-S*													100		
		Aspen													17,872		
8	Dallas	D-F							5						5	5	30
		S-F				4,606	3,020	855	420	50	30	105	40	75	9,201	7,626	79,717
		Aspen													2,570		

* Dead Spruce

(Table Continued)

Table 28 (Continued)
Area of Commercial National Forest Lands By Compartments
Timber Types, Stand Size, and Stocking Class

Alpine Block Compartment No.	Name	Major Types	Large Saw-timber		Small Sawtimber			Poletimber			Seedling-Sapling			Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
			Med	Poor	Well	Med.	Poor	Well	Med.	Poor	Well	Med	Poor				
9	Lake Fork	D-F				165	2,560	500	120	30					3,375	2,725	16,290
		PP				35	1,360			210					1,605	1,395	3,584
		S-F		30		1,470	2,945	430	1,175	150					6,200	4,445	46,465
		Aspen													3,800		
10	Little Cimarron	D-F					30								30	30	179
		S-F				1,810	2,400	330	1,480	120	20		20		6,180	4,210	44,008
		Aspen													240		
11	Lou Creek	S-F				1,555	2,585	390	1,330	40			30		5,930	4,140	43,277
		Aspen													4,582		
12	North Henson	D-F				70	50		15						135	120	717
		PP					10								10	10	26
		S-F				70	669		550	60				120	1,469	739	7,725
		Aspen													999		
13	Ouray	D-F					80								80	80	478
		W-F*					215								215	215	
		S-F				110	235	10	50						405	345	3,606
		Aspen													605		
14	Ophir	D-F				60	455	70	90	160					835	515	3,079
		PP								5					5		
		S-F			30	1,455	3,964	1,645	2,055	590	190		150	170	10,249	5,449	56,960
		Aspen													9,174		
15	Blue Creek	D-F				40	25	20							85	65	389
		PP					2,060								2,060	2,060	5,293
		Aspen													3,725		

*White Fir

(Table Continued)

Table 28 (Continued)
Area of Commercial National Forest Lands By Compartments
Timber Types, Stand Size, and Stocking Class

Plateau Block Compartment No.	Name	Major Types	Large Sawtimber Med.	Large Sawtimber Poor	Small Sawtimber Well	Small Sawtimber Med.	Small Sawtimber Poor	Poletimber Well	Poletimber Med.	Poletimber Poor	Seedling-Sapling Well	Seedling-Sapling Med.	Seedling-Sapling Poor	Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
16	Brush Ridge	D-F				60	25								85	85	508
		PP		80			430		40						550	510	1,310
		Aspen													2,820		
17	Copper King	D-F					170		10						180	170	1,016
		PP					2,870		45	260					3,175	2,870	7,374
		S-F					130		5						135	130	1,359
		Aspen													2,341		
18	Cottonwood	D-F					30			90					120	30	179
		PP		410			4,845		140	470				120	5,985	5,255	13,503
		S-F				210	290		20						520	500	5,227
		Aspen													4,525		
19	Craigs Point	D-F					340		120						460	340	2,033
		PP		120			10,450		100	370				190	11,230	10,570	27,159
		Aspen													2,220		
20	Dominguez	D-F							25						25		
		PP				20	490								510	510	1,310
		Aspen													1,555		
21	Fruita	D-F					30								30	30	179
		PP					70								70	70	180
		S-F				430	360	90	70						950	790	8,258
		Aspen													5,052		
22	Glencoe	D-F				70									70	70	418
		PP		970			4,365		120						5,455	5,335	13,708
		S-F							270						270	270	2,822
		Aspen													880		

(Table Continued)

Table 28 (Continued)
Area of Commercial National Forest Lands By Compartments
Timber Types, Stand Size, and Stocking Class

Plateau Block Compartment No.	Name	Major Types	Large Sawtimber Med	Large Sawtimber Poor	Small Sawtimber Well	Small Sawtimber Med.	Small Sawtimber Poor	Poletimber Well	Poletimber Med.	Poletimber Poor	Seedling-Sapling Well	Seedling-Sapling Med	Seedling-Sapling Poor	Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
23	Hanks Valley	D-F				30	220								250	250	1,495
		PP		190			3,820			50					4,060	4,010	10,304
		S-F					5								5	5	52
		Aspen													3,747		
24	Iron Springs	D-F				30	300		20						350	330	1,973
		PP					4,095			10					4,105	4,095	10,522
25	Kelso	D-F					310	15	10	50					385	310	1,853
		PP				25	2,383			85					2,493	2,408	6,187
		S-F				35	420	80	150						685	455	4,756
		Aspen													13,558		
26	Love Mesa	D-F		70		115	1,225	25	20						1,455	1,410	8,429
		PP	190	915		30	8,068		140	40					9,383	9,203	23,647
		S-F				1,947	6,699	501	225					30	9,402	8,646	90,379
		Aspen													15,194		
27	Mesa Creek	D-F				140	405	135	410	130					1,220	545	3,258
		PP		40			3,520								3,560	3,560	9,147
		S-F					150								150	150	1,568
		Aspen													8,690		
28	Monitor	D-F		100			471								571	571	3,413
		PP		918			1,622			180					2,720	2,540	6,526
		S-F				531	1,802	130	982	40					3,485	2,351	24,576
		Aspen													5,946		
29	Naturita	D-F					1,000			20					1,020	1,000	5,978
		PP		631			8,010		10	1,794		20	240		10,705	8,641	22,203
		Aspen													325		

(Table Continued)

Table 28 (Continued)
Area of Commercial National Forest Lands By Compartments
Timber Types, Stand Size, and Stocking Class

Plateau Block Compartment No.	Name	Major Types	Large Sawtimber Med.	Large Sawtimber Poor	Small Sawtimber Well	Small Sawtimber Med.	Small Sawtimber Poor	Poletimber Well	Poletimber Med.	Poletimber Poor	Seedling-Sapling Well	Seedling-Sapling Med.	Seedling-Sapling Poor	Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
30	Paradox	D-F				90	135								225	225	1,345
		PP		40			450								490	490	1,259
		S-F			10	2,100	5,060	390	465	20				25	8,070	7,170	74,950
		Aspen													11,255		
31	Pine Mountain	D-F					50		5	25					80	50	299
		PP					899		5						904	899	2,310
		Aspen													165		
32	Roubideau	D-F					548		30	49					627	548	3,276
		PP					2,135				5				2,140	2,135	5,486
		S-F				2,568	4,744	25	875	166				40	8,418	7,312	76,435
		Aspen													10,693		
33	Sanborn Park	D-F				60	250			130					440	311	1,859
		PP		120			6,636		840	495					8,091	6,756	17,359
		S-F					110								110	110	1,150
		Aspen													840		
34	Silesca	D-F					249	40	89						378	249	1,489
		PP					1,009				59				1,068	1,009	2,593
		S-F				2,210	4,001	130	300	20					6,661	6,211	64,926
		Aspen													4,619		
35	Spring Creek	D-F		15		40	303								358	358	2,140
		PP					2,754								2,754	2,754	7,076
		S-F			10	2,556	2,239		15						4,820	4,805	50,228
		Aspen													5,308		

(Table Continued)

Table 28 (Continued)
Area of Commercial National Forest Lands By Compartments
Timber Types, Stand Size, and Stocking Class

Plateau Block Compartment No.	Name	Major Types	Large Saw-timber		Small Sawtimber			Poletimber			Seedling-Sapling			Non-stocked	Total of Type	Total Saw-timber	Present Approx. Volume MBF
			Med.	Poor	Well	Med.	Poor	Well	Med.	Poor	Well	Med.	Poor				
36	Spruce	D-F					340	20	35						395	340	2,033
	Mountain	PP		1,132			1,222			35			30	40	2,459	2,354	6,049
		S-F				15	130	230	55						430	145	1,516
		Aspen													5,835		
37	Unaweep	D-F				195	395	359	394	110	70				1,523	590	3,527
		PP	20	140		245	10,642	20	30	185				90	11,372	11,047	28,385
		S-F				20	235	225							480	255	2,666
		Aspen													10,919		
38	Upper Tabeguache	D-F					70								70	70	418
		PP					340		70						410	340	874
		S-F				660	815	30	120						1,625	1,475	15,419
		Aspen													6,690		
39	Scanalrock	PP		20			840							1,380	2,240	860	2,210
40	Bigwater	PP		35			165							60	260	200	514
41	Cedar	None															
	Total		210	6,006	50	38,848	163,842	12,120	24,305	10,544	499	550	940	4,490	443,445	209,250	1,396,798

Table 29

Area of Commercial National Forest Land
By Blocks, Timber Types, Stand Size and Stocking Class

Block & Type	Large Sawtimber			Small Sawtimber				Poletimber				Seedling-Sapling				Non-stocked	Total For Types
	Med.	Poor	Total	Well	Med.	Poor	Total	Well	Med.	Poor	Total	Well	Med.	Poor	Total		
Ouray Block																	
Douglas-fir					760	5,248	6,008	720	410	260	1,390						7,398
Ponderosa Pine		30	30			1,555	1,555			225	225						1,810
White Fir					40	175	215										215
Spruce-Fir		30	30	30	23,301	38,868	62,199	8,935	17,635	5,235	31,805	365	530	670	1,565	2,515	98,114
Dead Spruce																	100
Aspen							5,981				36,842				11,196	20	54,039
Sub-Total		60	60	30	24,101	45,846	75,958	9,655	18,045	5,720	70,262	365	530	670	12,761	2,535	161,676
Plateau Block																	
Douglas-fir		185	185		800	6,961	7,761	614	1,168	604	2,386	70			70		10,402
Ponderosa Pine	210	5,761	5,971		320	84,190	84,510	20	1,540	3,974	5,534	64	20	270	354	1,880	98,249
Spruce-Fir				20	13,282	27,190	40,492	1,831	3,552	246	5,629					95	46,216
Aspen							1,984				113,917				11,001		126,902
Sub-Total	210	5,946	6,156	20	14,402	118,341	134,747	2,465	6,260	4,824	127,466	134	20	270	11,425	1,975	281,769
Total For Working Circle	210	6,006	6,216	50	38,503	164,187	210,705	12,120	24,305	10,544	197,728	499	550	940	24,186	4,510	443,445

COMPARTMENT MAP

UNCOMPAHGE WORKING CIRCLE – 2

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
LYLE F. WATTS, CHIEF
ANTHONY P. DEAN, CHIEF, DIVISION OF ENGINEERING

UNCOMPAHGRE NATIONAL FOREST

COLORADO

NEW MEXICO PRINCIPAL AND SIXTH PRINCIPAL MERIDIANS

1951

Scale 1 ½ 0 1 2 3 4 5 Miles

Revised 3/60
File No. 2400

LEGEND

- National Forest Boundary
- Adjacent National Forest Boundary
- Good motor road
- Poor motor road
- Trail
- Railroad
- Telephone line
- Supervisor's headquarters / District ranger station. (Report fires here)
- Guard or ranger station (not permanently occupied)
- House, cabin or other building
- Schoolhouse
- Triangulation station
- Improved recreation area
- Improved picnic ground
- Wilderness area (100,000 acres or more)
- Wild area (less than 100,000 acres)

FOREST SERVICE MAP CLASSIFICATION AREAS

LEGEND

Areas to be Cut over During Planning Period FY 1962-1971

Access Roads Needed to Harvest this Timber (Rd No.)

Compiled and drawn at Regional Office, Denver, June 1951 from Forest Service, U.S.G.S. and S.C.S. Aerial Surveys, B.L.M. and other surveys, by V.W. West and R.F. Burrus.

Longitude west from Greenwich

Polyconic projection North American datum